

WHAT IS CLAIMED IS:

1. A solid-state image sensor which includes a microlens array (MLA) in which a plurality of microlenses (ML11, ML12, ML13, ML14, ML2) are arrayed so as to constitute a plurality of rows and a plurality of columns,

wherein when a first axis (AX1) parallel to the plurality of rows and passing through an array center (C) as a center of the microlens array, and a second axis (AX2) parallel to the plurality of columns and passing through the array center are defined, microlenses, out of the plurality of microlenses, positioned on a virtual circle (VC) having the array center as a center includes a first microlens (ML11, ML12, ML13, ML14) positioned on one of the first axis and the second axis, and a second microlens (ML2) positioned on neither the first axis nor the second axis, and

each of the first microlens and the second microlens has a non-circular bottom shape, and

a width (W2) of the second microlens (ML2) in a second direction (DIR2) passing through the second microlens and the array center is larger than a width (W11) of the first microlens in a first direction (DIR1) passing through the first microlens and the array center, characterized in that

the first microlens has a line-symmetric shape with respect to a straight line parallel to the first direction as a symmetrical axis and the second microlens has a line-symmetric shape with respect to a straight line parallel to the second direction as a symmetrical axis.

2. The solid-state image sensor according to claim 1, wherein a top position (VP1) of the first microlens is at a position shifted to a side of the array center from a center of the width (CW1) of the first microlens in the first direction and a top position (VP2) of the second microlens is at a position shifted to the side of the array center from a center of the width (CW2) of the second microlens in the second direction.

3. The solid-state image sensor according to claim 1 or 2, wherein a cross-sectional shape of the second microlens cut along a straight line parallel to the second direction includes a shape obtained by enlarging, with respect to both the first direction and a height direction of the microlenses or with respect to only the first direction, at least a part of a cross-sectional shape of the first microlens cut along a straight line parallel to the first direction.
4. The solid-state image sensor according to claim 1 or 2, wherein a cross-sectional shape of the second microlens cut along a straight line parallel to the second direction is geometrically similar to a cross-sectional shape of the first microlens cut along a straight line parallel to the first direction.
5. The solid-state image sensor according to any one of claims 1 to 4, wherein a bottom outer edge of the first microlens includes (E1) 20 a portion parallel to the first direction and a portion (E2) perpendicular to the first direction, and
a bottom outer edge of the second microlens includes a portion (E3) parallel to the second direction and a portion (E4) perpendicular to the second direction.
6. The solid-state image sensor according to any one of claims 1 to 5, wherein letting θ be an angle formed by the first axis and the second direction, the width of the second microlens in the second direction is increased in accordance with an increase in θ in ranges of $0^\circ < \theta \leq 45^\circ$, $90^\circ < \theta \leq 135^\circ$, $180^\circ < \theta \leq 225^\circ$, and $270^\circ < \theta \leq 315^\circ$, and the width of the second microlens in the second direction is decreased in accordance with the increase in θ in ranges of $45^\circ \leq \theta < 90^\circ$, $135^\circ < \theta \leq 180^\circ$, $225^\circ < \theta \leq 270^\circ$, and $315^\circ < \theta \leq 360^\circ$.
7. A camera comprising:
a solid-state image sensor defined in any one of claims 1 to 6; and
a processor configured to process a signal output from the solid-state image sensor.