



I/We claim:

1. An imaging sensor comprising:
 - an imaging chip in which a plurality of pixel are arranged in a matrix; and
 - a signal processing chip that is each provided for one or more pixel columns or one or more pixel rows, has a device that performs signal processing on a pixel signal output from a pixel, and is stacked with the imaging chip.
2. The imaging sensor according to Claim 1, wherein the device that performs signal processing is an A/D converter that converts a pixel signal output from the pixel into a digital signal.
3. The imaging sensor according to Claim 2, wherein when a pixel signal output from the pixel is converted into a digital signal, at least two or more A/D converters among the A/D converters are controlled in parallel.
4. The imaging sensor according to Claim 3, wherein at least a part of the A/D converters is arranged on a surface that is parallel with a surface on which the pixel is arranged.
5. The imaging sensor according to Claim 3, wherein
 - the A/D converter is each provided for any one or more pixel columns, and
 - a length of the respective A/D converter in a column direction is shorter than a column of the plurality of pixels in the imaging chip.
6. The imaging sensor according to Claim 5, wherein the respective A/D converter is arranged at a constant interval in a row direction and the column direction.
7. The imaging sensor according to Claim 3, further comprising a control unit that reads out a pixel signal from the plurality of pixels in the imaging chip on a row-by-row basis, and inputs, in parallel, the pixel signal of the pixel in each column to the corresponding A/D converter.
8. The imaging sensor according to Claim 3, wherein
 - the imaging chip and the signal processing chip are connected electrically by a plurality of bumps, pixels that are provided along respective columns are connected to common output interconnections, and
 - the respective A/D converter is connected to the output interconnection via a corresponding bump among the plurality of bumps.

9. The imaging sensor according to Claim 8, wherein

the output interconnection is each provided with the single bump, and
the bumps corresponding to the output interconnections that are adjacent to each other in a row direction are arranged to be displaced by predetermined intervals in terms of positions in a column direction.

10. The imaging sensor according to Claim 8, wherein

the output interconnection is each provided with a plurality of the bumps, and
the plurality of bumps are arranged at constant intervals in a row direction and in a column direction.

11. The imaging sensor according to Claim 3, wherein

the imaging chip and the signal processing chip are connected electrically via a plurality of through-silicon vias,

pixels provided along respective columns are connected to common output interconnections, and

the respective A/D converter is connected to the output interconnection via a corresponding through-silicon via among the plurality of through-silicon vias.

12. An imaging device comprising the imaging sensor according to any one of Claims 1 to 11.

13. An imaging sensor comprising:

a pixel unit that has a plurality of unit groups that each include a plurality of pixels;
a readout unit that reads out signals from pixels of the unit group in the unit of the unit group; and

a signal processing unit that is stacked with the pixel unit and has a first signal processing circuit that performs signal processing on a signal from a first pixel of the unit group that is read out by the readout unit, and a second signal processing circuit that performs signal processing on a signal from a second pixel in the unit group that is read out by the readout unit.

14. The imaging sensor according to Claim 13, wherein

the signal processing unit is stacked under the pixel unit, and
the first signal processing circuit is arranged at a position under the pixel unit corresponding to an unit group having the first pixel and the second pixel, and the second signal

processing circuit is arranged at a position not under the pixel unit corresponding to the unit group.

15. The imaging sensor according to Claim 13 or 14, wherein

the first signal processing circuit is a first A/D convertor that converts a pixel signal from the first pixel into a digital signal, and

the second signal processing circuit is a second A/D convertor that converts a pixel signal from the second pixel into a digital signal.

16. The imaging sensor according to Claim 13 or 14, wherein

the pixel unit and the signal processing unit are connected via a plurality of bumps, and the bumps are arranged in the respective unit groups.

17. The imaging sensor according to Claim 13 or 14, wherein

the plurality of pixels are arranged in a first direction, and a second direction that crosses the first direction,

the pixel unit and the signal processing unit are connected via a plurality of bumps, and

the plurality of bumps are arranged at constant intervals in the first direction and the second direction.

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