

V. PINNED BURIED PNIP PHOTODIODE TYPE SOLAR CELL

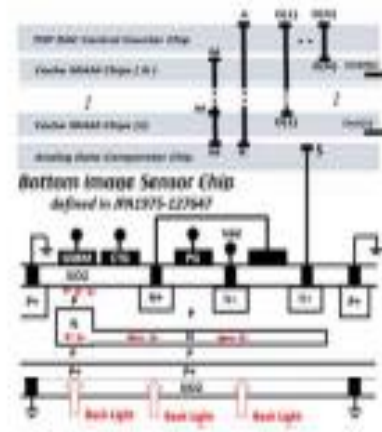
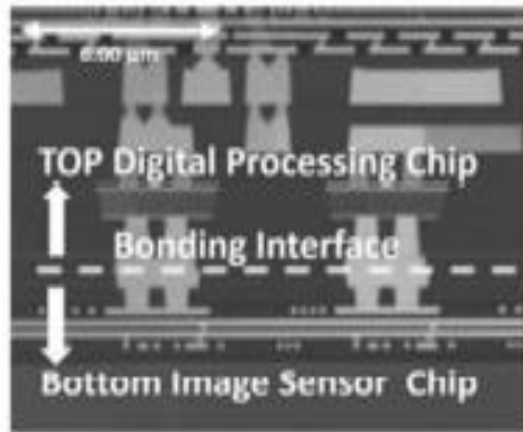
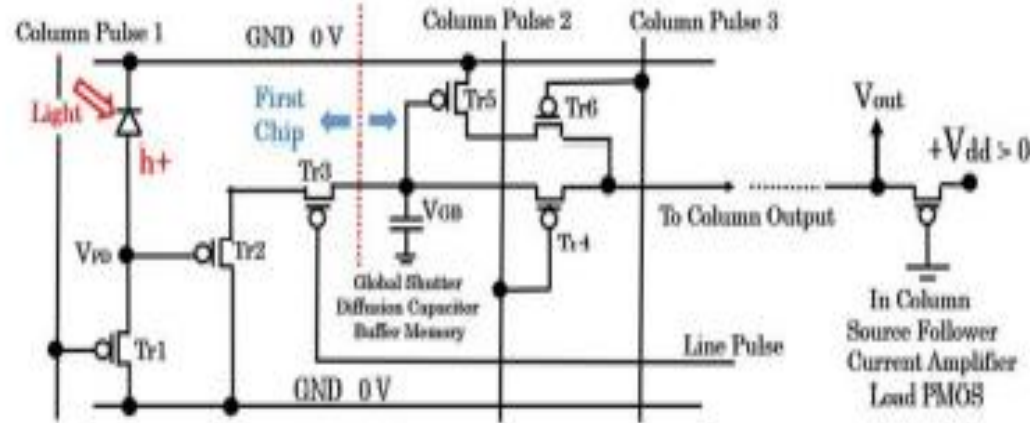


Fig. 13 Active In-Pixel Current AMP 1C6T Circuit (Hagiwara 2020) and Two-chip Stacked Back-Light CMOS Imager (Courtesy of Sony Corporation)

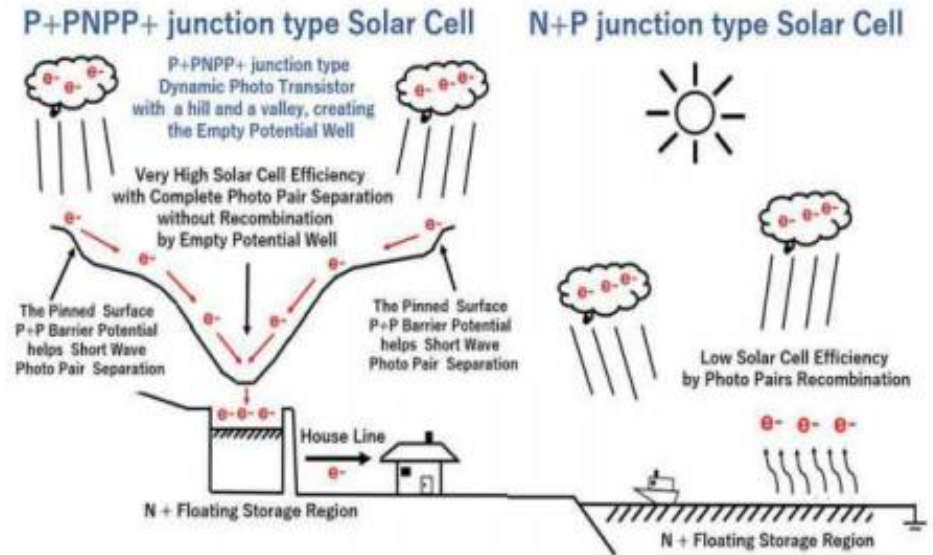


Fig. 14 Analogy of rain drops and photo electrons under the sunshine.

- [12] Yoshiaki Hagiwara, "Multichip CMOS Image Sensor Structure for Flash Image Acquisition", IEEE 2019 International 3D Systems Integration Conference (3DIC2019), Sendai, Japan, September 2019.
- [13] Y. Hagiwara, "Simulation and Device Characterization of the P+PN+P Junction Type Pinned Photodiode and Schottky Barrier Photodiode" IEEE 2020 Electron Devices Technology and Manufacturing Conference (EDTM2020), Paper ID No. 3C, 6 March 2020
- [14] Y. Hagiwara, "Electrostatic and Dynamic Analysis of P+PNP Double Junction and P+PNPN Triple Junction Pinned Photodiodes", Inter. Jour. of Sys. Sci. and Appl. Math. Vol. 6, Issue 2, June 2021, PP.55-76.
- [15] Taku Umebayashi, Hiroshi Takahashi, Reijiro Soji, Japanese Patent No. 5773379 (JPA2014-260268), on the Cu-to-Cu direct contact technique to achieve the 3D stacked multi-chip LSI system (2014).