V. SONY DISCLOSED THE INVENTOR OF SONY HAD SENOSR.

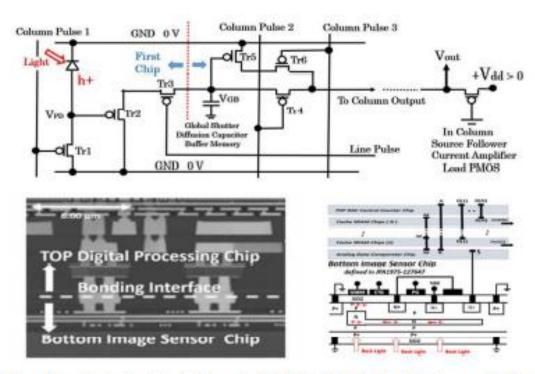


Fig. 13 Active In-Pixel Current AMP 1C6T Circuit (Hagiwara 2020) and Two-chip Stacked Back-Light CMOS Imager (Curtesy of Sony Corporation)

In 2020, Sony developed a multi-chip back-light CMOS image sensor based on Hagiwara's original 1975 ideas. Sony then for the first time in the public explained the facts on the original 1975 inventions by Hagiwara in details and the development efforts by Hagiwara Team in 1978 details. Sony official public WEB site [15] said, "In 1975, Sony invented a CCD image sensor that adopted a back-illuminated N+NP+N junction type and an N+NP+NP junction type Pinned Photodiode (PPD) (Japanese patent application number 1975-127646, 1975-127647 Yoshiaki Hagiwara). In the same year, inspired by such structure, Sony invented a PNP junction type PPD with VOD (vertical overflow drain) function (Japanese Patent No. 1215101 JPA1975-134985 applied by Yoshiaki Hagiwara on November 23, 1975)." See Fig. 13.

- [15] https://www.sony.com/en/SonyInfo/News/notice/20200626/
- [16] Taku Umebayashi, Hiroshi Takahashi, Japanese Patent No. 5773379 on the invention of the Cu-to-Cu direct contact technique.