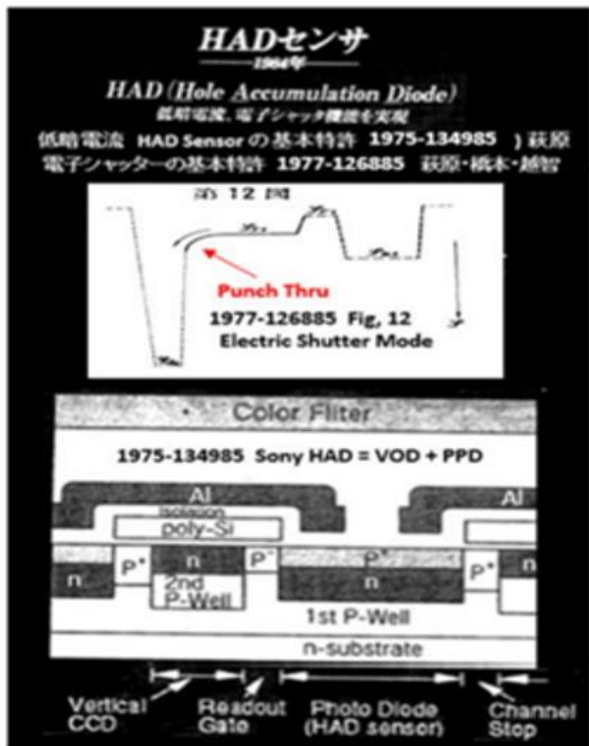


Hagiwara also proposed the thyristor type punch-thru clocking scheme, synchronized with the TV scanning system to achieve the electric shutter.

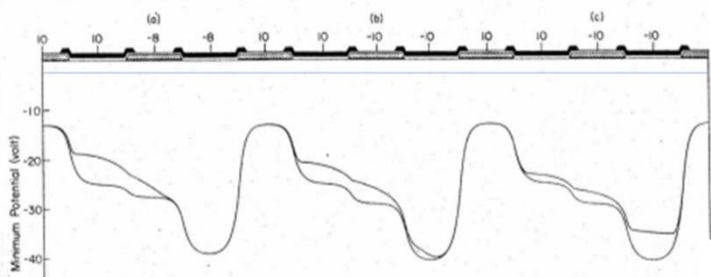


Electric Shutter Basic Patent Award from Sony President Idei to Yoshiaki Hagiwara for Japanese Patent 1977-126885 by Hagiwara



[Caltech 1975 PhD Thesis Yoshiaki Daimon Hagihara.pdf](#)

Exact Numerical Computer Simulation of Charge Transfer Action in Buried Channel CCD presented in ISSCC1974 by Yoshiaki Daimon-Hagiwara

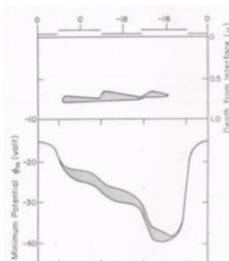


for details see the PhD Thesis by Yoshiaki Daimon-Hagiwara on June 1975 from Caltech.



Charge-Coupled Devices and Applications  
 Editor  
 Lewis M. Terman

My PhD thesis paper on buried channel CCD at ISSCC1974, in Philadelphia, USA



Prof. T. C. McGill



Prof. C. A. Mead

Four Japanese Patent Applications on Pinned Photodiode with Electric Shutter Function and also With the in-Pixel Global Shutter MOS/CCD Buffer Memory Function for Modern CMOS Image Sensors.

[Japanese Patent Application JPA1975-127646](#)

[Japanese Patent Application JPA1975-127647](#)

[Japanese Patent Application JPA1975-134985](#)

[Japanese Patent Application JPA1977-126885](#)

Five Recently Published Papers by Hagiwara(AIPS)

[ICECET2021 Paper75.pdf](#)

[ICECET2021 Paper61.pdf](#)

[IJSSM2021 e-Journal Paper on Pinned Photodiode.html](#)

[EDTM2020 Conference Paper ID 3C4 by Hagiwara\(PDF\)](#)

[P2019 3DIC2019 Paper on 3D Pinned Photodiode 6 pages.pdf](#)

The first Pinned Photodiode papers in 1977 and 1978 by Hagiwara at Sony

[Hagiwara SSDM1978 Paper on Pinned Buried Photodiode.pdf](#)

[P1977 Narrow Channel Transfer Gate CCD SSDM1977 Paper by Hagiwara.pdf"](#)



Prof. James McCaldin and Hagiwara