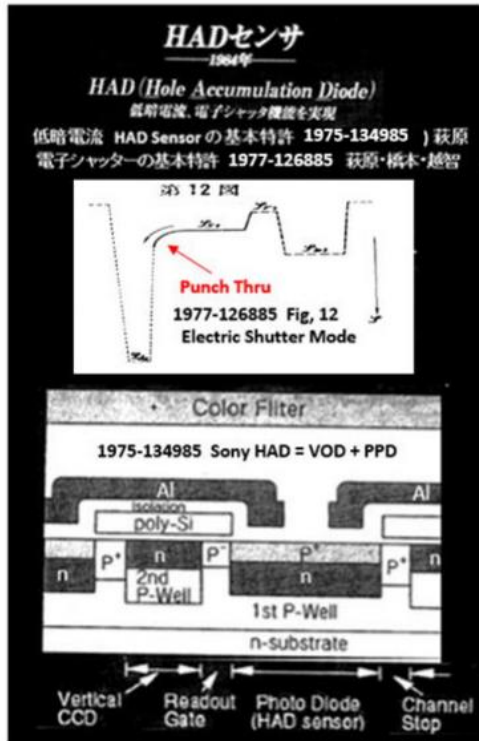


Hagiwara also proposed the thyristor type punch-thru clocking scheme, synchronized with the TV scanning system to achieve the electric shutter.

The Pinned Photodiode (Sony Original HAD sensor) Structure



(from SONY Product Catalog)

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



Four Japanese Patent Applications on Pinned Photodiode with Electric Shutter Function and Global Shutter Function.

[Japanese Patent Application JPA1975-127646](#)

[Japanese Patent Application JPA1975-127647](#)

[Japanese Patent Application JPA1975-134985](#)

[Japanese Patent Application JPA1977-126885](#)

The first Pinned Photodiode papers by Hagiwara

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

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

Five Recently Published Papers by Hagiwara(AIPS)

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

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

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

[ICECET2021 Paper61.pdf](#)

[ICECET2021 Paper75.pdf](#)