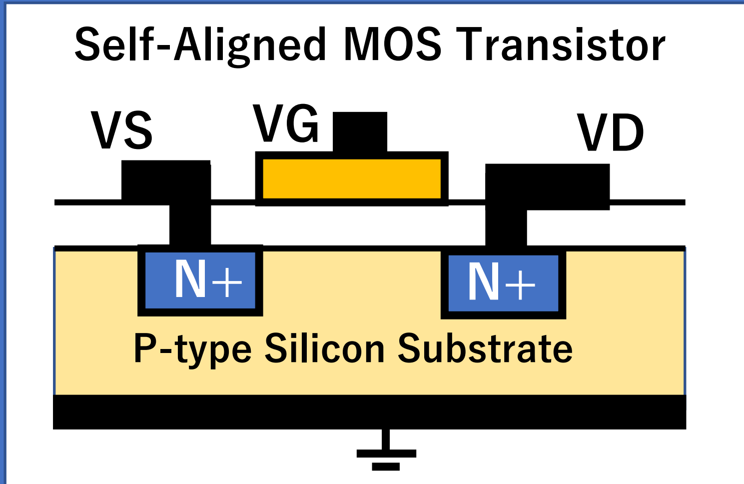
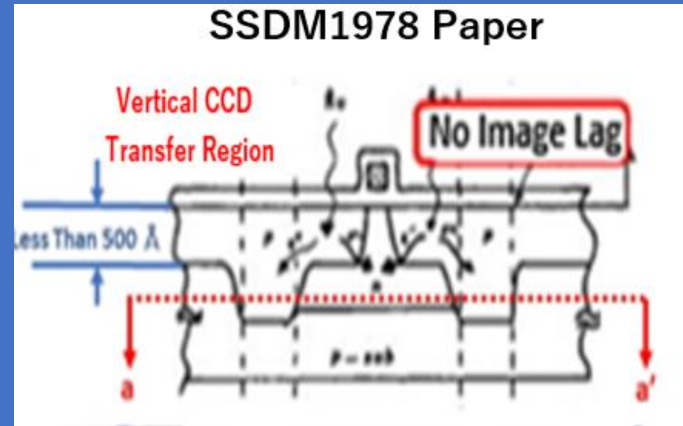
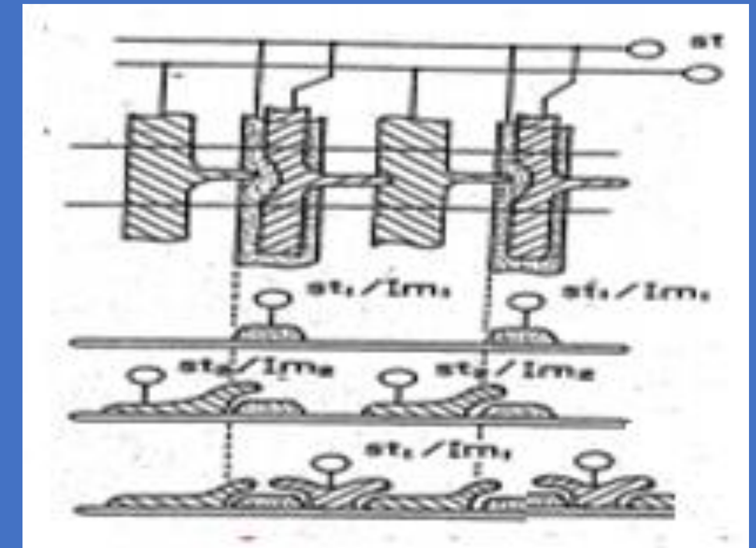
The self-aligned ion implantation technology using the Polysilicon Gate Patterns as Masking invented by Dr. Robert. W. Bower in 1966.

USP3472712, Oct 17, 1966 and USP3615934, Oct 30, 1967



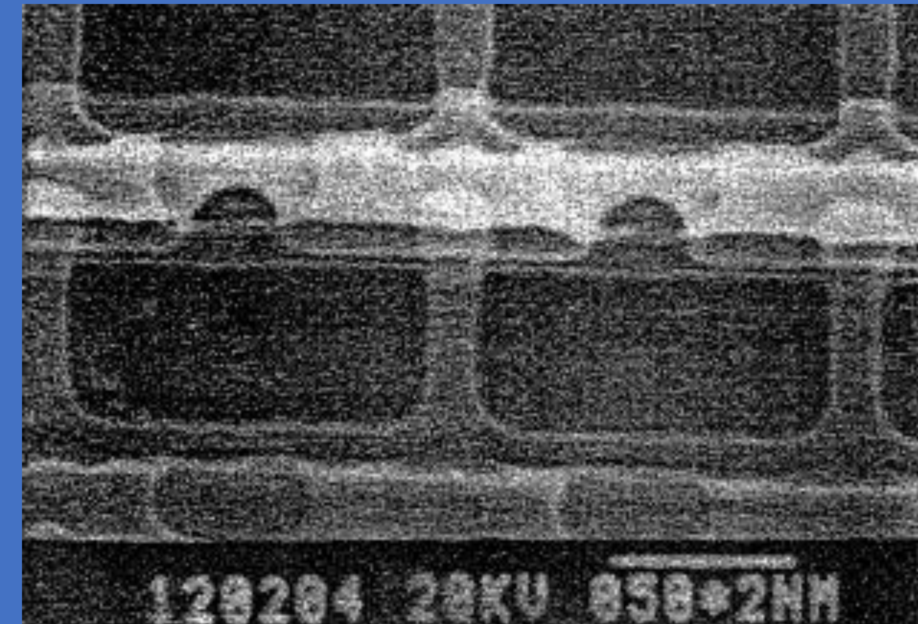




Since the early 1960's, this technique of ion implantation into the silicon substrate, has been known to produce many practical device structures.

The polysilicon patterns were used then for the masking of the ion implantation technology, as originally invented by Dr. Robert Bower in 1966. And it is now widely used to form the source and drain of self-aligned polysilicon gate CMOS transistors.

It is a very basic and practical technique. And it is now applied here to form the shallow junction layer at the Si-SiO2 interface of the image sensing element, which is now called as the hole accumulation diode（SONY HAD sensor）, which is also identical to the widely known Pinned Buried Photodiode as invented in 1975 by Hagiwara at Sony and developed by Hagiwara Team at Sony in 1978.



(b) SEM picture of imaging area.
Cell size is 11μmH x 13μmV