

Story of Pinned Photodiode

Japanese Patent Application JAP1975-127646
 on Triple Junction Dynamic Photo Thyristor type
 Pinned Buried Photodiode
 invented by Hagiwara at Sony in 1975
 with the back light illumination scheme and
 the Global Shutter Function MOS Buffer Memory
 and also with the vertical excess charge control and
 the excess-charge draining VOD capability and
 the complete charge transfer capability
 with the no-image-lag feature and
 the electric shutter function
 for filmless and mechanical-parts free
 fast action video cameras

JPA 1975-127646 Claims Japanese Patent Claims

特許請求の範囲

半導体基体の一方の主面側に、絶縁膜を介して電荷転送用電極が被覆配列される1の導電型の転送領域が形成され、之に対向し且つ之より上記半導体基体の他方の主面側に上記転送領域との間隔他の導電型のベース領域を介して受光領域が形成され、上記ベース領域に所定電圧を印加することにより上記受光領域に蓄積した電荷を上記転送領域に転送し、上記電荷転送用電極に所定のクロック電圧を印加して電荷の転送を行うようにしたことを特徴とする固体撮像装置。

English Translation

An array of charge transfer gates is formed on the oxide layer of a semiconductor wafer (Nsub). The first charge transfer region (P) is formed under the oxide layer at the semiconductor surface. There is a base gating region (N) between the first region (P) and the second photo charge collecting region (P+) which is formed in the substrate (Nsub). By proper gating clocks, the photo charge is drained to the surface region (N) and transferred along the semiconductor surface.

