

Story of Pinned Photodiode

Japanese Patent Application JAP1975-127647
 on Double Junction Dynamic Photo Transistor 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 1975-127647 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、之より上記半導体基体の他方の主面側に上記転送領域に接する他の導電型の領域と積層域に接する1の導電型の領域とより成る受光領域が形成され、上記転送用電極に所定の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上記所定の電圧とは異なるクロック電圧を印加して上記基体の上記一方の主面に沿って電荷の転送を行うより成る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 charge transfer region (N) is formed under the oxide layer at the semiconductor surface while the second photo charge collecting and storage region (P+) is formed in the substrate (Nsub). By proper gating clocks, the photo charge is drained to the surface region (N) and then transferred along the semiconductor front surface.

Fig. 7 第7図

