

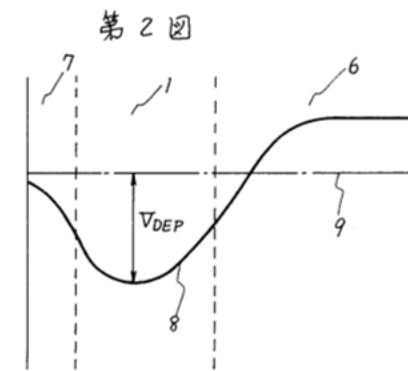
JPA1980-138026 applied on Oct 2, 1980

Inventors Teranishi, Ishihara and Shiraki at NEC

The P surface of this NEC PNP Buried Photodiode is not pinned. This NEC Buried Photodiode with the serious image lag data is by definition not a Pinned Photodiode. The evidence is shown in Fig. 2 of JPA1980-138026, in which the strong electric field is reaching to the surface P layer, though the buried N region is shown to be completely depleted in Fig. 2. However, NEC did not explain that the pinned P surface is an absolutely necessary condition to achieve the complete empty potential well and the no-image lag. The NEC did not explain the importance of the RC delay time.

JPA1980-138026

Figure 2



IEDM1984 NEC Paper

Figure 5

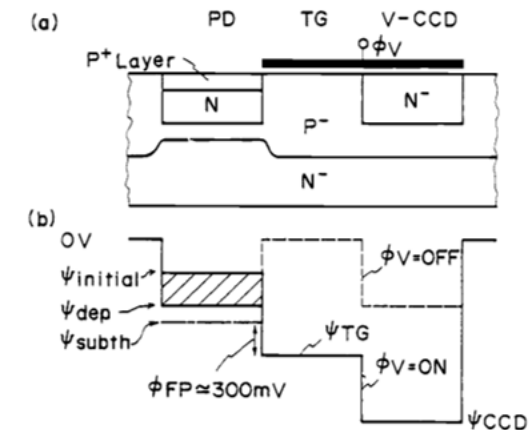
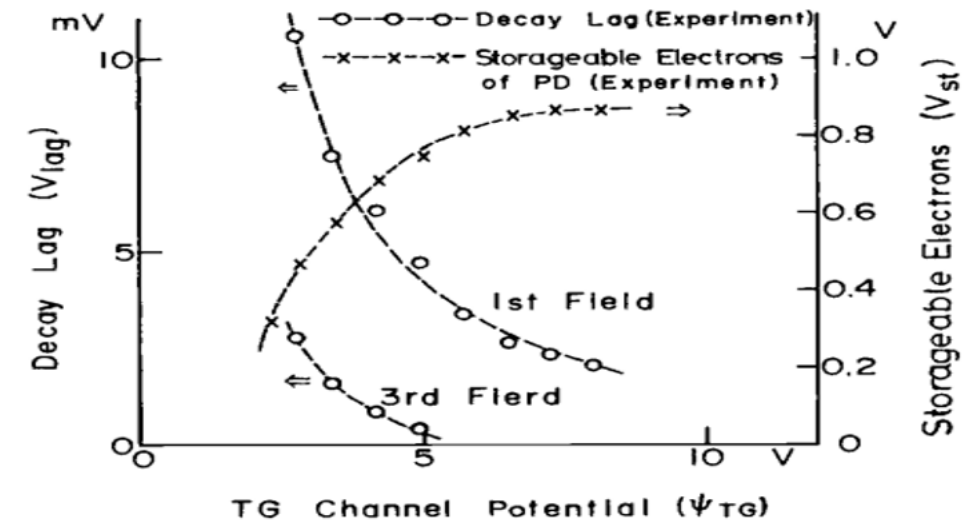


Figure 6



④固体撮像装置とその駆動方法

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Fig. 5 of the IEDM1984 NEC paper showed PNP Buried Photodiode with the floating surface P layer without any adjacent heavily-doped P+ channel region, causing the serious image-lag as shown in Fig. 6.

Sony never paid any PPD related IP money to NEC. Instead NEC gave up Image Sensor business.