
EXHIBIT P

1. A solid state imaging apparatus comprising:

(A) a plurality of photodiodes arranged in an array;

(B) a plurality of floating diffusion sections each being connected to ones of the photodiodes via each of

(C) a plurality of transfer transistors;

(D) a plurality of read-out lines each being selectively connected to at least two of the transfer transistors;

(E) a plurality of reset transistors each being connected to one of the plurality of floating diffusion sections;

(X) a plurality of reset pulse lines each being connected to at least one of the plurality of reset transistors; and

(F) a plurality of pixel amplifier transistors each detecting and outputting the potential of each said floating diffusion

wherein (A) the plurality of photodiodes includes (a1) a first photodiode, (a2) a second photodiode and (a3) a third

(a1) the first photodiode is in row n, where n is a positive integer,

(a2) the second photodiode is in row n+1,

(a3) the third photodiode is in row n+2,

(D) the plurality of read-out lines includes (d1) a first read-out line and (d2) a second read-out line,

(d1) the first read-out line and (d2) the second read-out line are disposed between the row n and the row n+1,

(x1) one of the (X) plurality of reset pulse lines is disposed between the row n+1 and the row n+2,

(f1) one of the (F) plurality of pixel amplifier transistors is disposed between the row n+1 and the row n+2.

Pixel Circuit Diagram

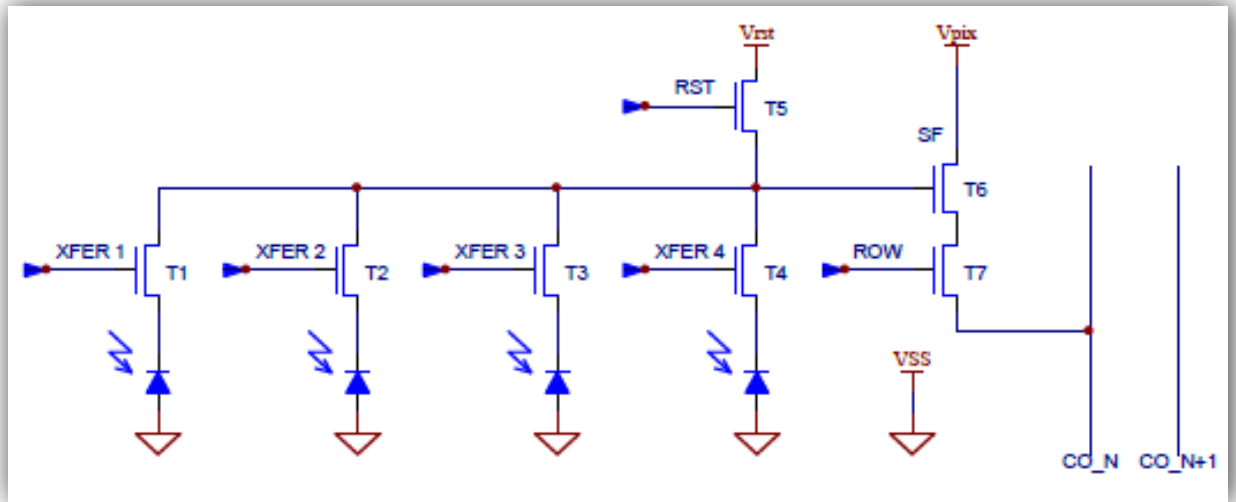
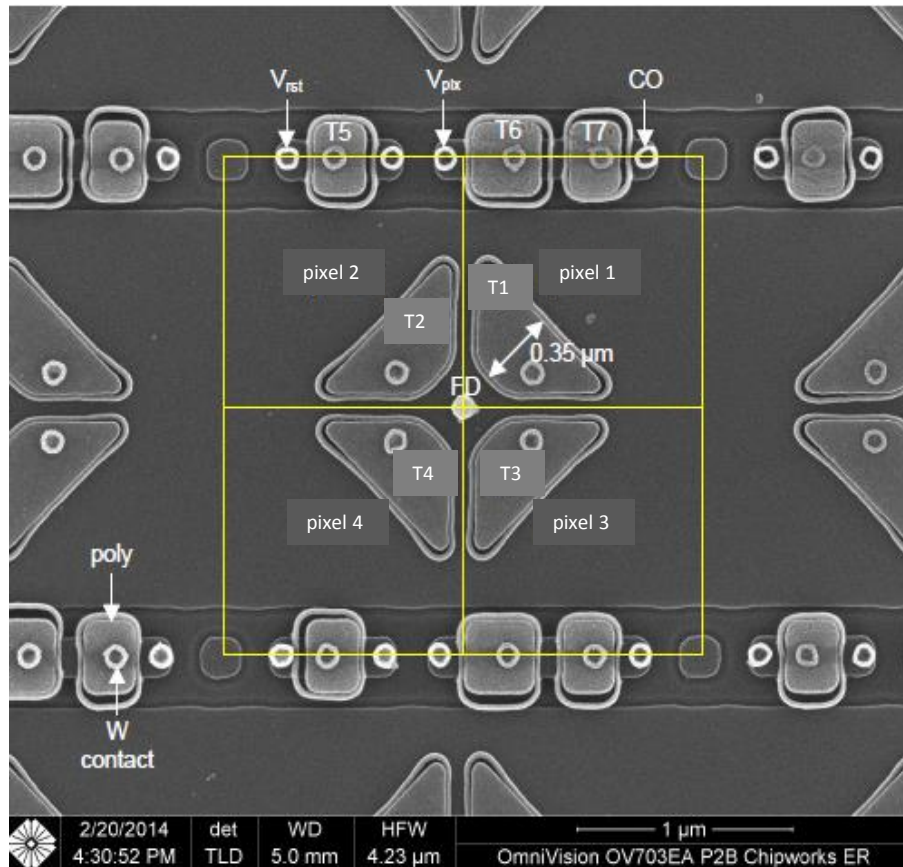
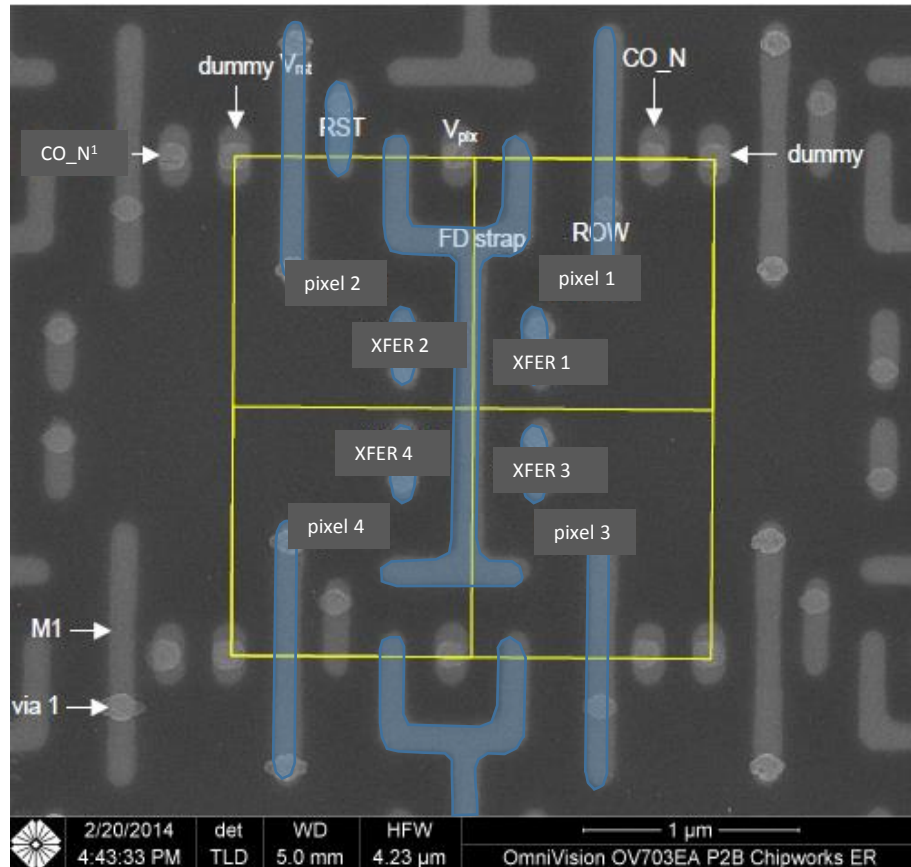


Figure 4.1.1 Shared Pixel Schematic

The shared pixel schematic for the four-shared pixel architecture is shown in Figure 4.1.1. The four photodiodes output through the transfer transistors (T1 – T4) to a common floating diffusion (FD).



Shared Pixels at Contact/Poly - SEM



Shared Pixels at Via 1/Metal 1 - SEM

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