
EXHIBIT O

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 plurality of photodiodes via each of (C) the plurality of transfer transistors;

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

(E) a plurality of pixel amplifier transistors each detecting and outputting the potential of each of the plurality of floating diffusion sections;

and (F) a plurality of power supply lines applying voltage to drain sections of the pixel amplifier transistors, wherein

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

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

(C) the plurality of transfer transistors includes (c1) a first transfer transistor and (c2) a second transfer transistor,

(a1) the first photodiode is in row n, where n is a positive integer, (a2) the second photodiode is in row n+1, (a1) the first photodiode and (a2) the second photodiodes are in the same column,

one of (B) the plurality of floating diffusion sections is connected to (a1) the first photodiode via (c1) the first transfer transistor and is connected to (a2) the second photodiode via (c2) the second transfer transistor,

(D) the plurality of read-out lines are disposed between (a1) the first and (a2) the second photodiodes,

(d1) the first read-out line is connected to (c1g) a gate of the first transfer transistor,

(d2) the second read-out line is connected to (c2g) a gate of the second transfer transistor, and

(D) the plurality of read-out lines and one of (F) the plurality of power supply lines intersect with each other.

Pixel Circuit Diagram

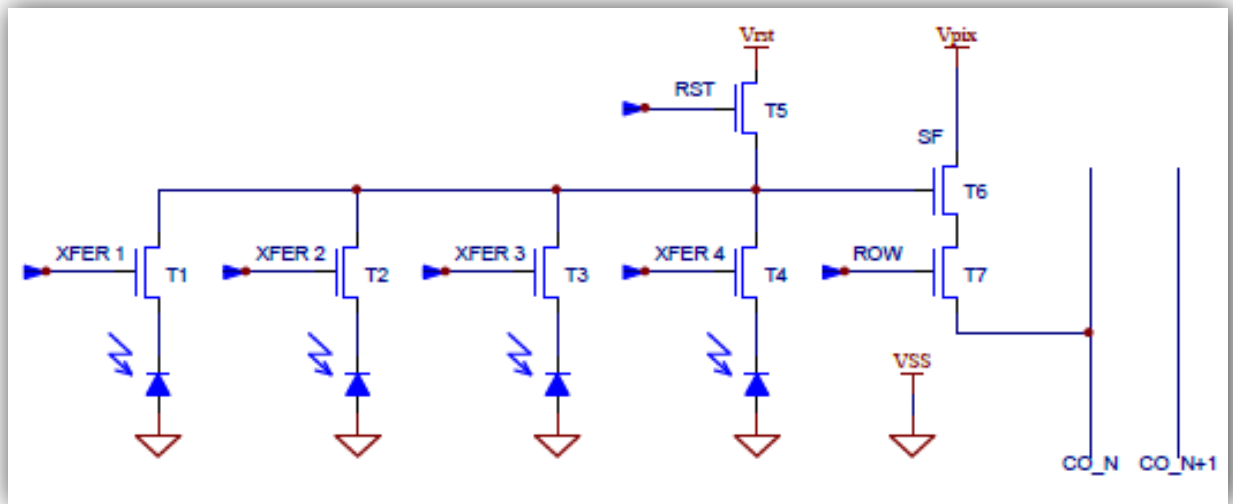
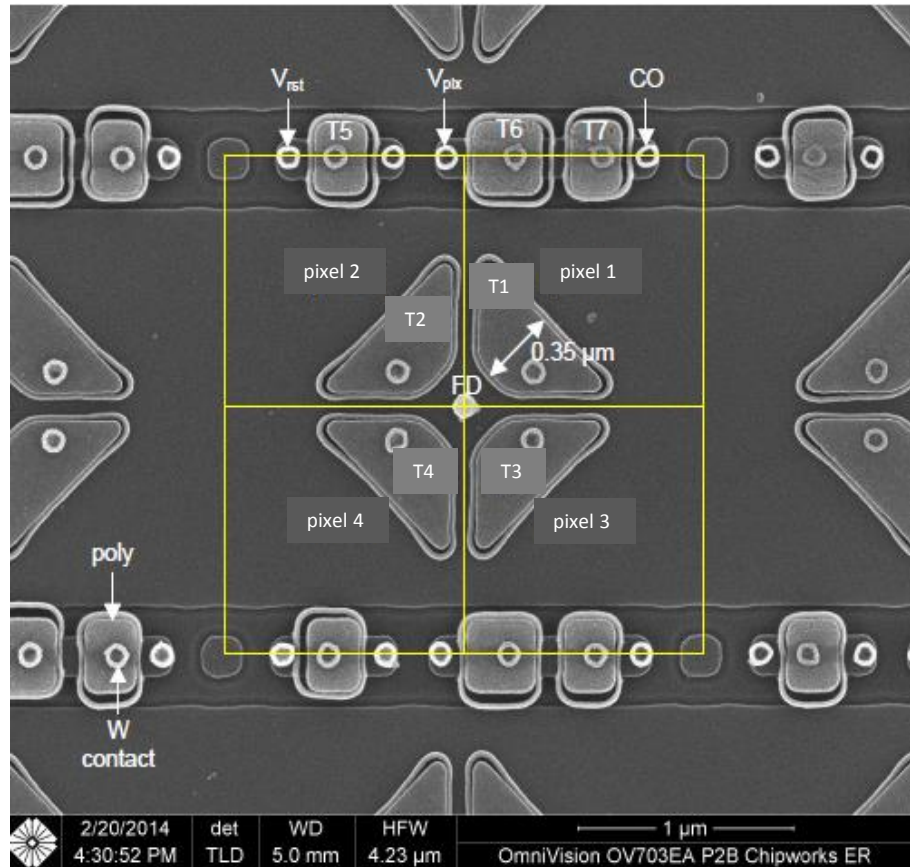
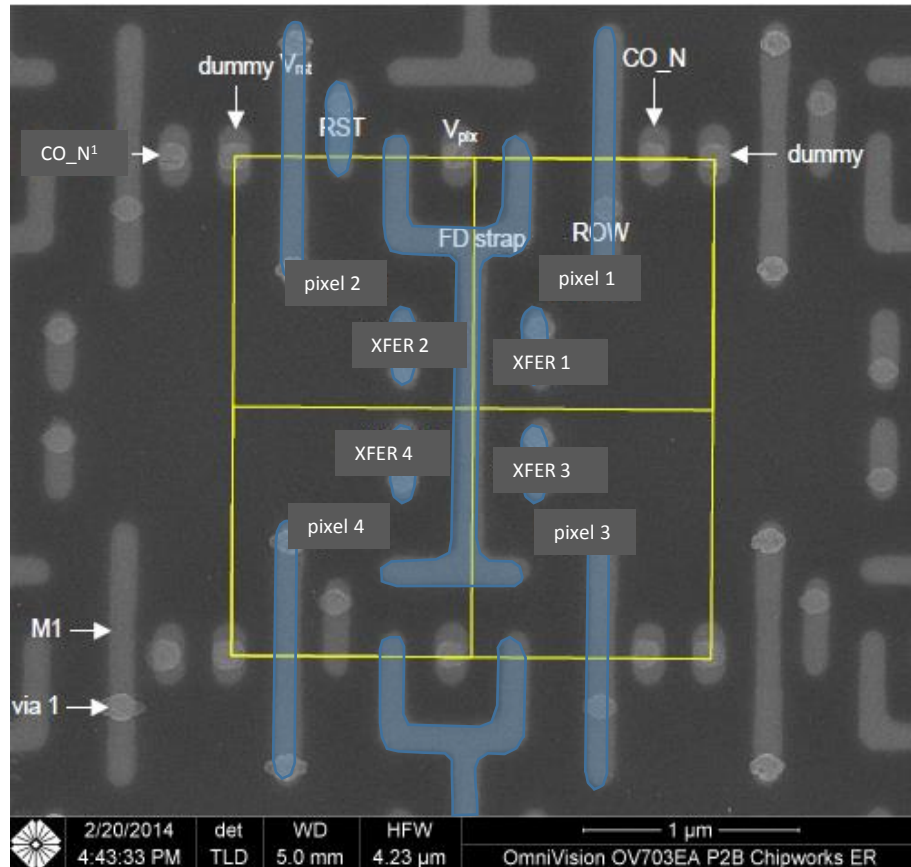


Figure 4.1.1 Shared Pixel Schematic

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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