
EXHIBIT Q

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 a plurality of transfer transistors;

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

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

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

(G) a plurality of signal lines each transferring an output from one of the plurality of pixel amplifier transistors, wherein (A) the plurality of photodiodes include (a1) a first photodiode, (a2) a second photodiode, (a3) a third photodiode, and (a4) a fourth photodiode,

(C) the plurality of transfer transistors include (c1) a first transfer transistor, (c2) a second transfer transistor, (c3) a third transfer transistor and (c4) a fourth transfer transistor,

(D) the plurality of read-out lines include (d1) a first read-out line, (d2) a second read-out line, (d3) a third read-out line, and (d4) a fourth read-out line,

(DA) (d1) the first read-out line is adjacent to (d2) the second read-out line,

(DB) (d2) the second read-out line is disposed between (d1) the first read-out line and (d3) the third read-out line,

(DC) (d3) the third read-out line is disposed between (d2) the second read-out line and (d4) the fourth read-out line,

(DD) (d1) the first read-out line is connected to (a1) the first photodiode in row m via (c1) the first transfer transistor, where m is a positive integer,

(DE) (d2) the second read-out line is connected to (a2) the second photodiode in the row m via (c2) the second transfer transistor,

(DF) (d3) the third read-out line is connected to (a3) the third photodiode in row m+1 via (c3) the third transfer transistor,

(DG) (d4) the fourth read-out line is connected to (a4) the fourth photodiode in the row m+1 via (c4) the fourth transfer transistor,

(AA) (a1) the first photodiode and (a3) the third photodiode are disposed in one of column n and column n+1, where n is a positive integer,

(AB) (a2) the second photodiode and (a4) the fourth photodiode are disposed in the other of the column n and the column n+1, and (H) one of the column n and the column n+1 is disposed between one of (G) the plurality of signal lines and the other of the column n and the column n+1.

Pixel Circuit Diagram

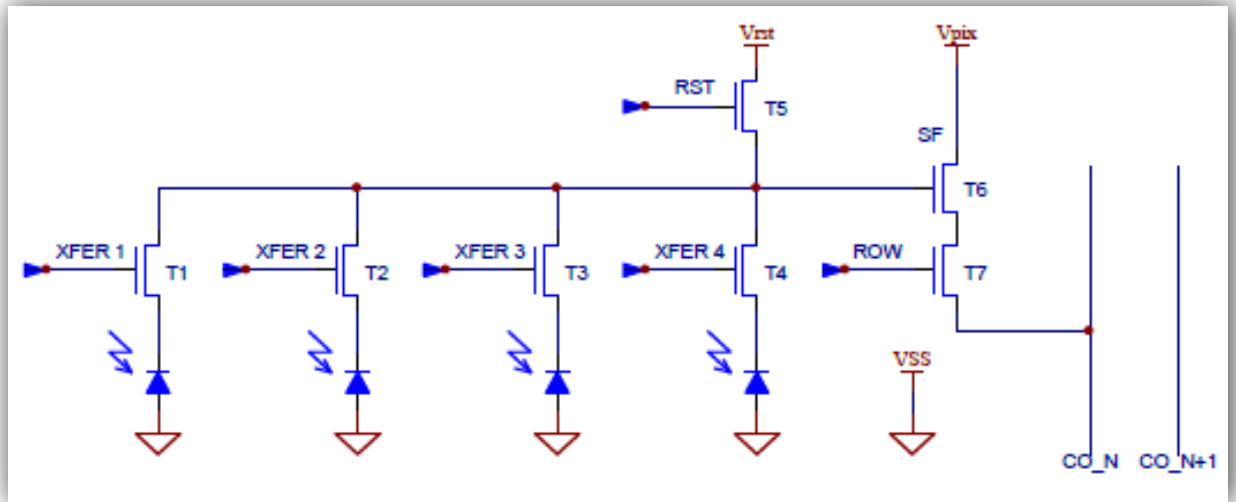
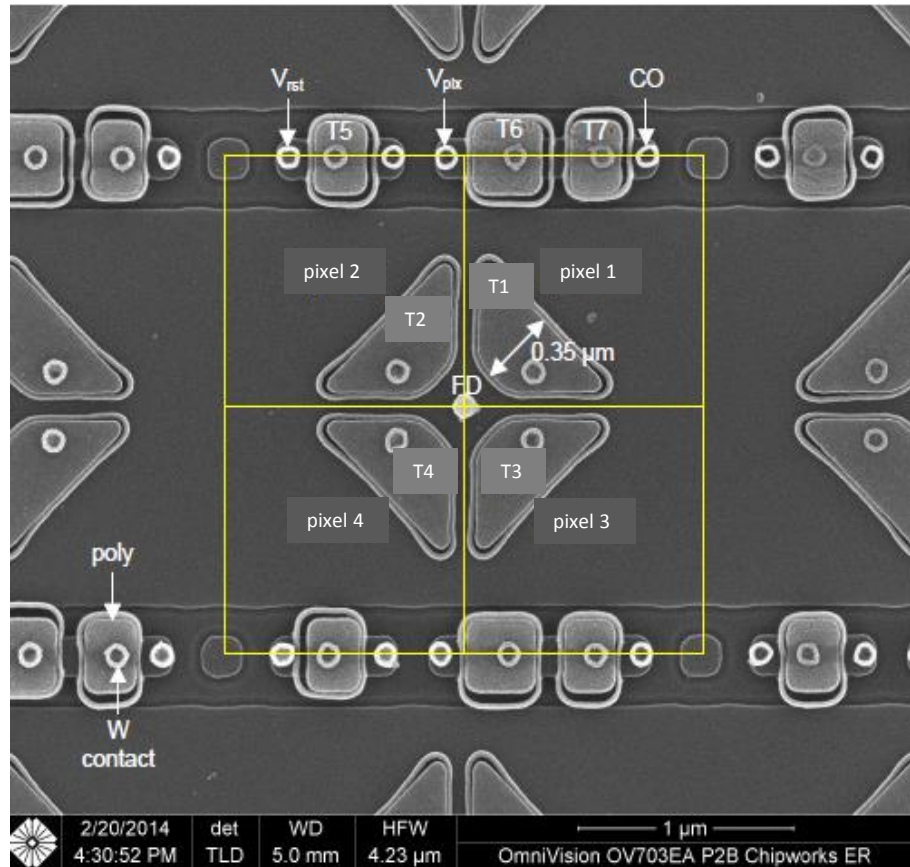
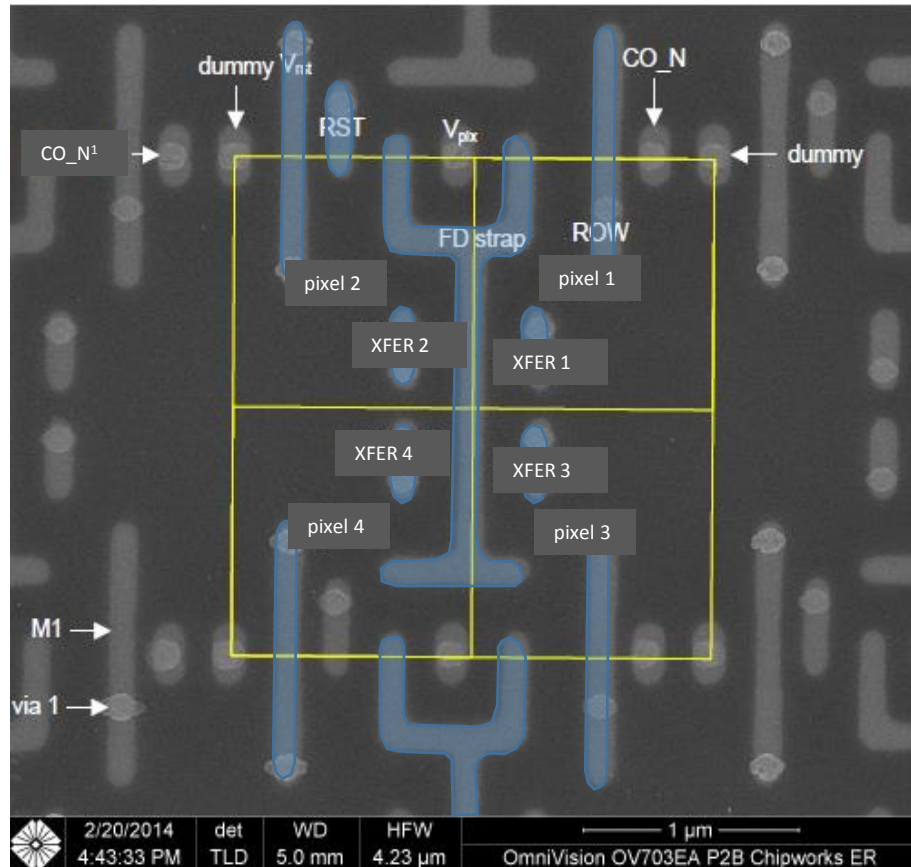


Figure 4.1.1 Shared Pixel Schematic

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

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.