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Flasck

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(54) **WAFER BASED ACTIVE MATRIX**

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- (73) Assignee: **RAF Electronics**, San Ramon, CA (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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- (21) Appl. No.: **08/324,540**
- (22) Filed: **Oct. 18, 1994**

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Related U.S. Application Data

- (63) Continuation of application No. 08/023,475, filed on Feb. 25, 1993, now abandoned, which is a continuation of application No. 07/392,859, filed on Aug. 11, 1989, now abandoned.
- (51) **Int. Cl.**⁷ **G09G 3/36**
- (52) **U.S. Cl.** **345/92; 345/93; 345/206; 349/42; 349/140**
- (58) **Field of Search** **345/87, 92, 93, 345/103, 205, 206; 359/53, 54, 57, 70; 349/5, 42, 73, 74, 10, 86, 88, 140**

Primary Examiner—Dennis-Doon Chow
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ABSTRACT

(57) A wafer based active matrix reflective light encoding system formed on a conventional wafer including a specular reflective back surface and an LC or similar characteristic material formed thereon which is electronically altered to impart or encode information onto a light beam which is directed to and reflected therefrom. The LC material preferably is a solid light modulating material having bodies of LC material suspended in the solid material. The matrix transistors can be any conventional type of crystalline based structure, such as NMOS, CMOS, or PMOS and can be coupled to the bit and/or word lines by fuses to prevent shorts associated with a single pixel from shorting a whole line. The pixel capacitor can include a junction or oxide type capacitor or a combination thereof. The matrix bit and/or word lines can include strapping to prevent open lines. The wafer based active matrix can be mated to a light directing and projecting structure to form a reflective image plane module which projects the reflected beam for viewing or imaging, such as through one or more lens to form a part of a projection system.

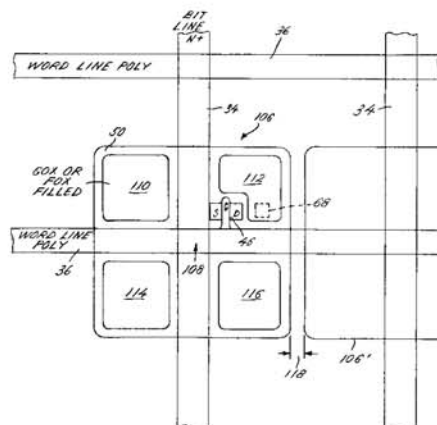
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26 Claims, 15 Drawing Sheets



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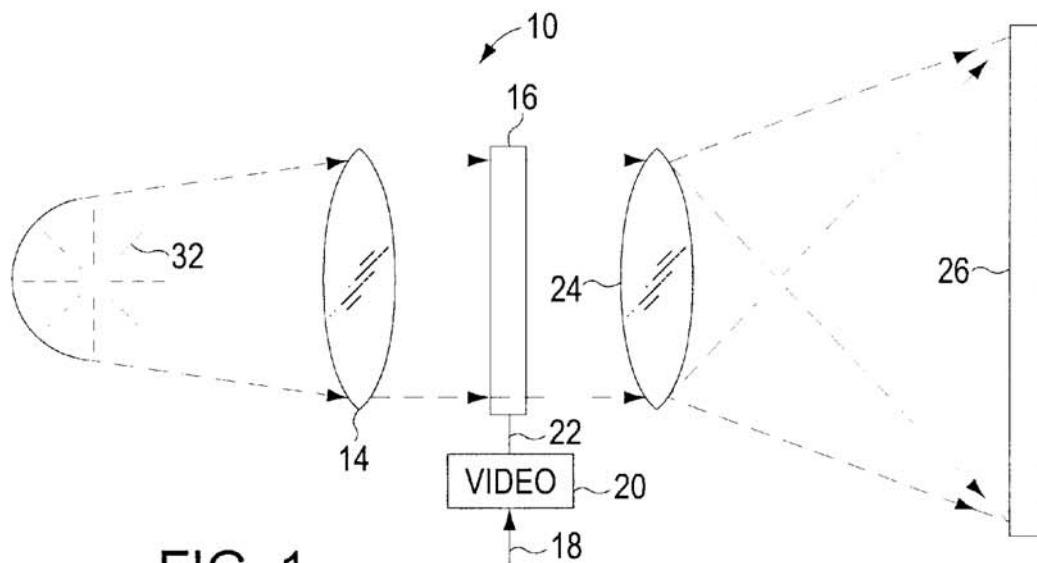


FIG. 1
(PRIOR ART)

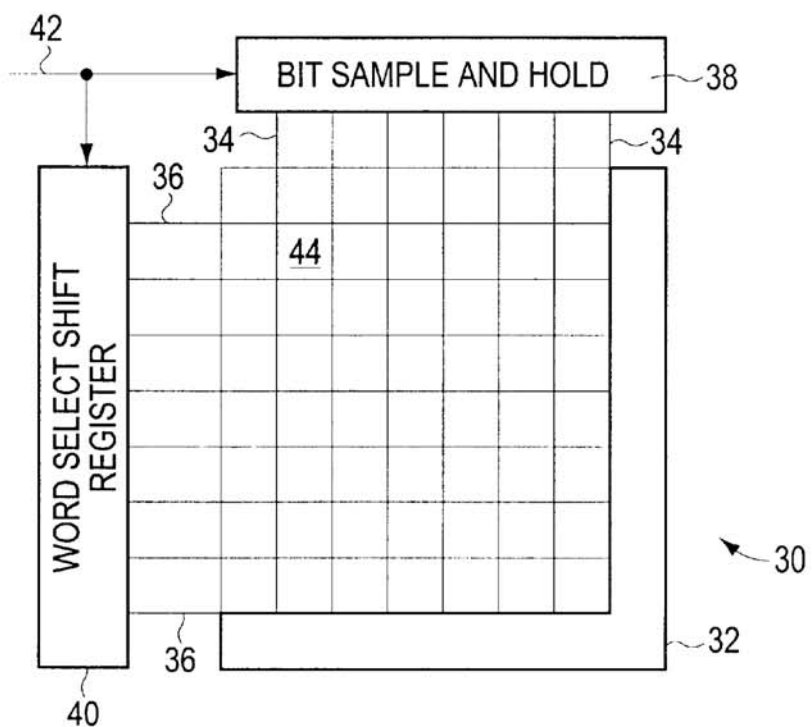


FIG. 2

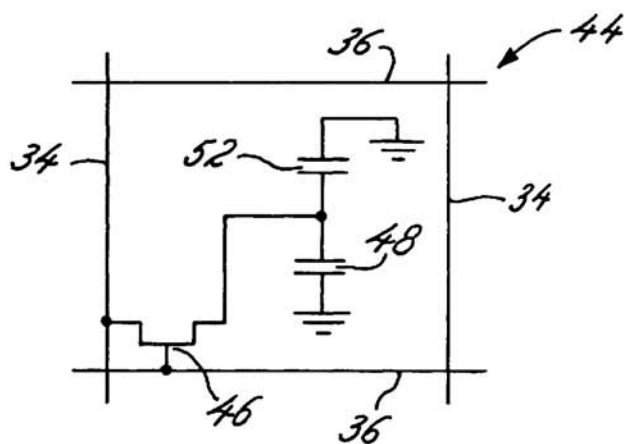


FIG. 3

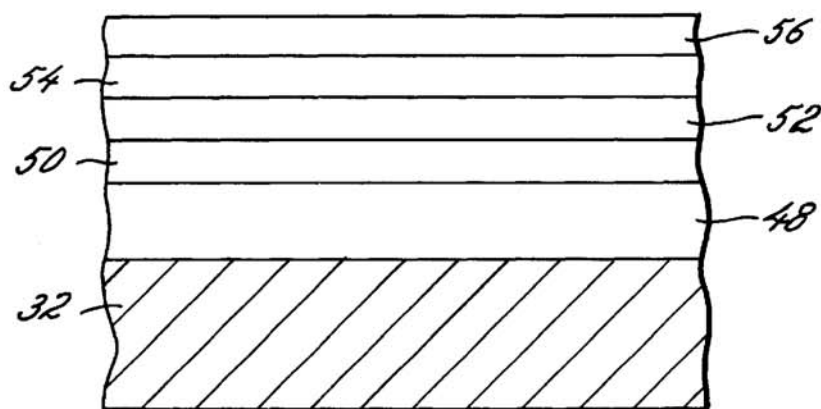


FIG. 4

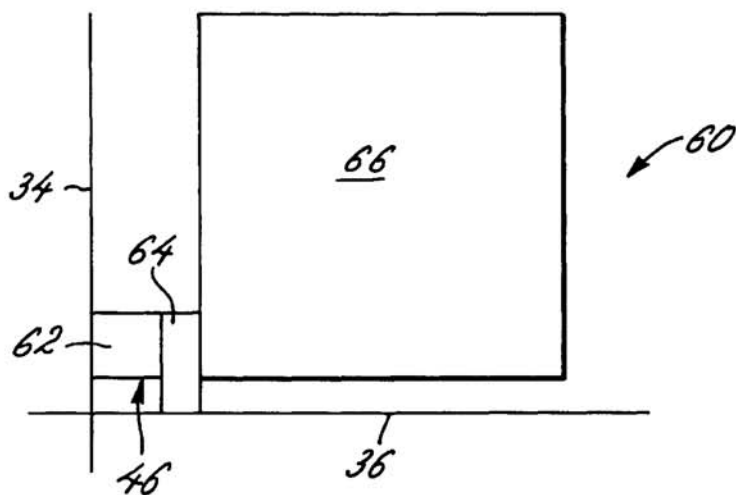


FIG. 5A

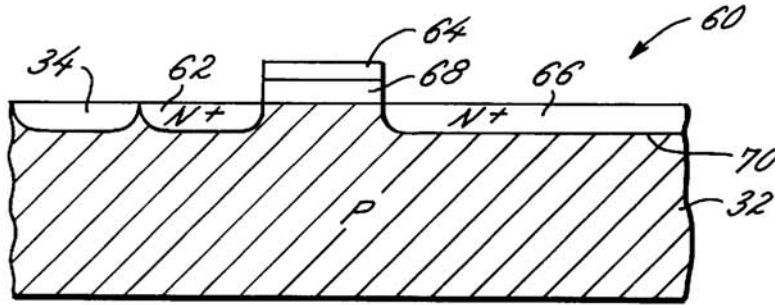


FIG. 5B

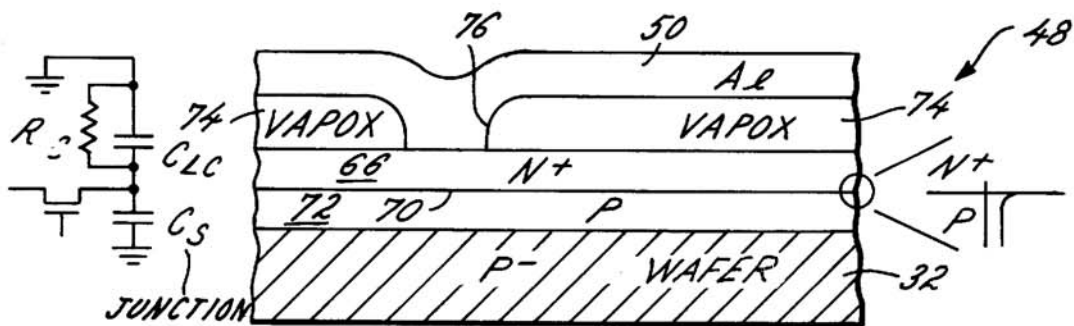


FIG. 6

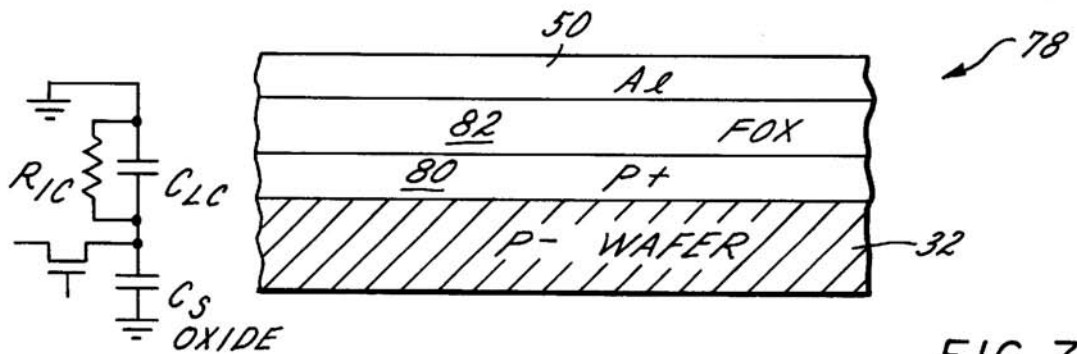


FIG. 7

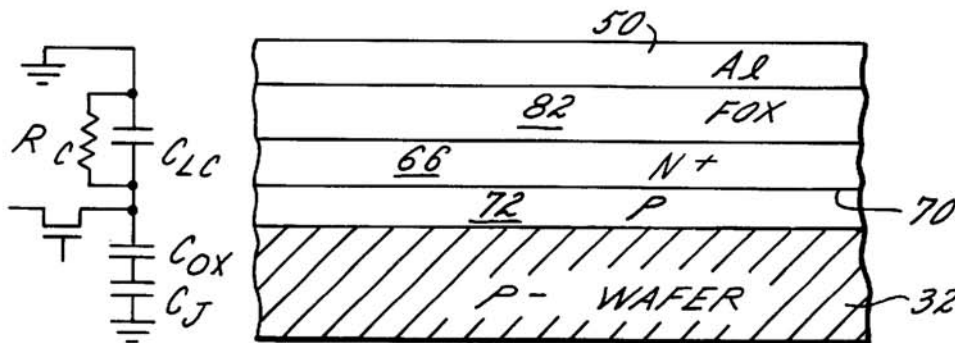


FIG. 8

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