
EXHIBIT E

(12) **United States Patent**
Mori et al.

(10) **Patent No.:** **US 8,084,796 B2**
(45) **Date of Patent:** **Dec. 27, 2011**

(54) **SOLID STATE IMAGING APPARATUS,
METHOD FOR DRIVING THE SAME AND
CAMERA USING THE SAME**

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(75) Inventors: **Mitsuyoshi Mori**, Kyoto (JP); **Takumi Yamaguchi**, Kyoto (JP); **Takahiko Murata**, Osaka (JP)

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(73) Assignee: **Panasonic Corporation**, Osaka (JP)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 465 days.

Japanese Decision of Rejection, with partial English translation, issued in Japanese Patent Application No. 2006-343810, mailed Mar. 9, 2010.

(Continued)

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Primary Examiner — Wael Fahmy
Assistant Examiner — John C Ingham

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Related U.S. Application Data

(74) *Attorney, Agent, or Firm* — McDermott Will & Emery LLP

(63) Continuation of application No. 10/706,918, filed on Nov. 14, 2003, now Pat. No. 7,436,010.

(57) **ABSTRACT**

Foreign Application Priority Data

A solid state imaging apparatus includes: a plurality of photoelectric conversion cells each including a plurality of photoelectric sections arranged in an array of at least two rows and two columns; a plurality of floating diffusion sections each being connected to each of ones of the photoelectric sections which are included in the same row of each said photoelectric conversion cell via each of a plurality of transfer transistors, and being shared by said ones of the photoelectric sections; a plurality of read-out lines each being selectively connected to at least two of the transfer transistors; and a plurality of pixel amplifier transistors each detecting and outputting the potential of each said the floating diffusion section. Charges of the photoelectric conversion sections each being connected to one of the read-out lines and being read out by the transfer transistors are read out by different floating diffusion sections.

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(51) **Int. Cl.**
H01L 31/062 (2006.01)

(52) **U.S. Cl.** .. 257/292; 257/223; 257/445; 257/E27.139

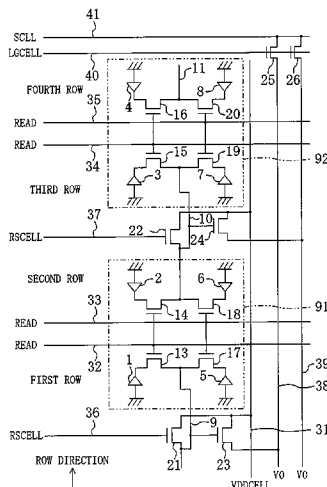
(58) **Field of Classification Search** 257/223,
257/258, 291, 292, 443-445
See application file for complete search history.

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4 Claims, 10 Drawing Sheets



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FIG. 1

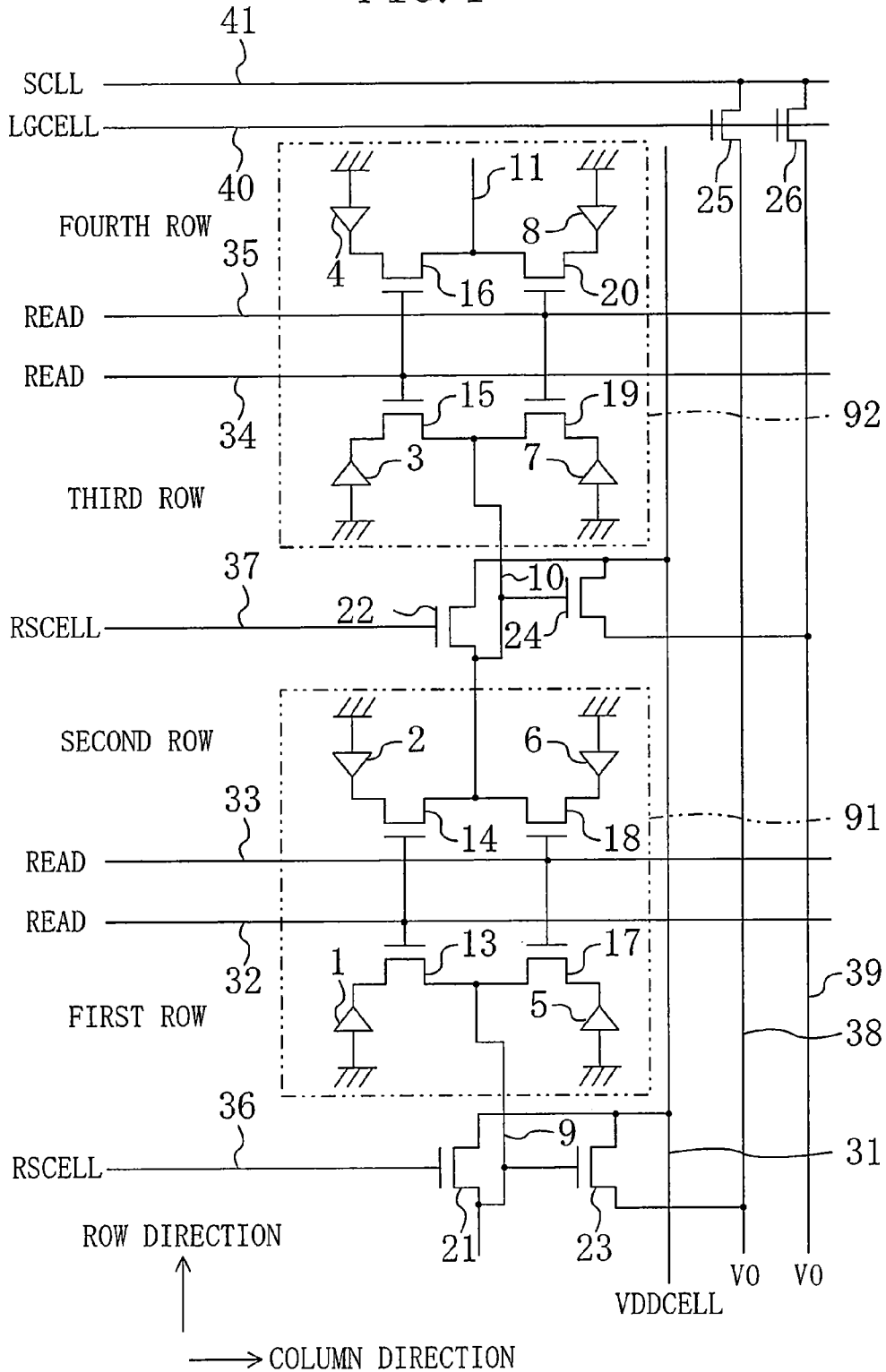
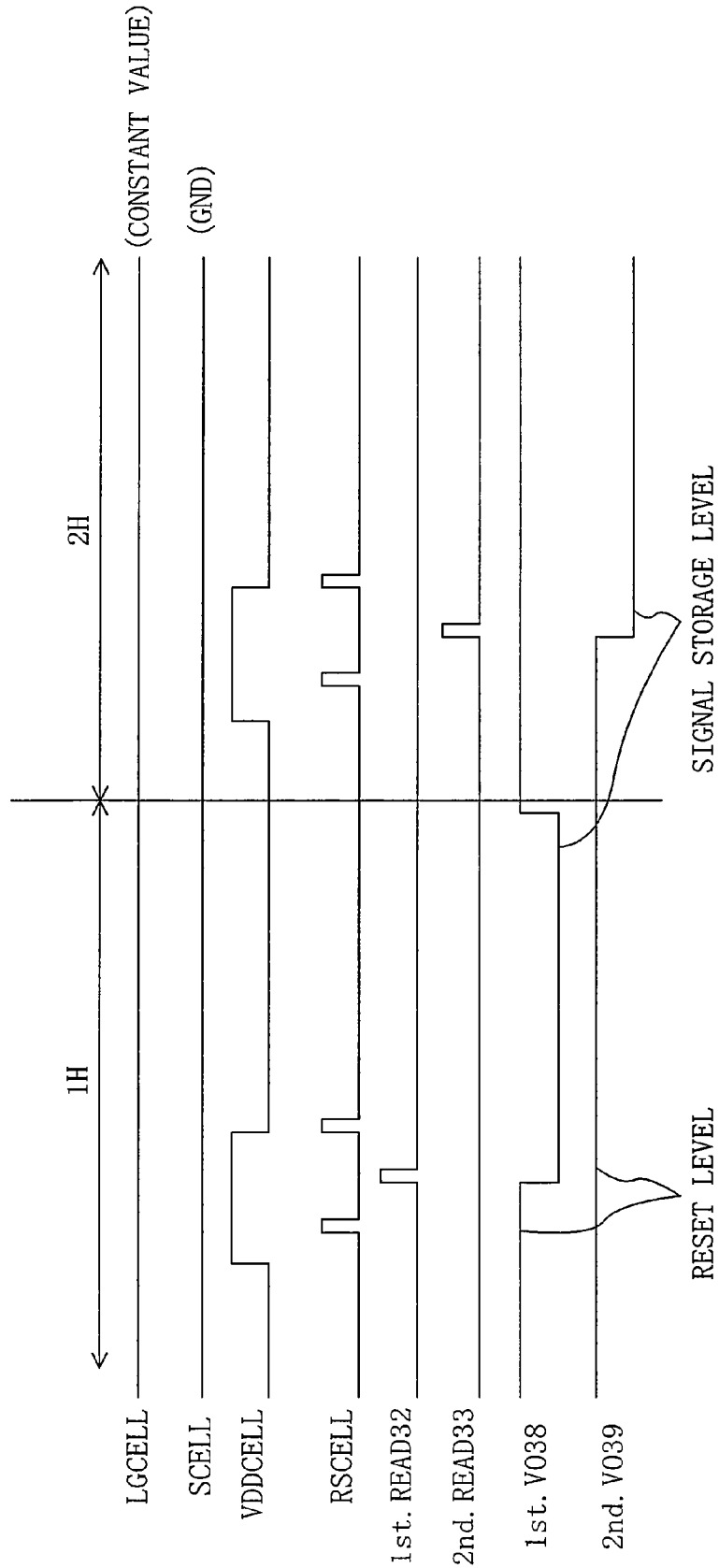


FIG. 2



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