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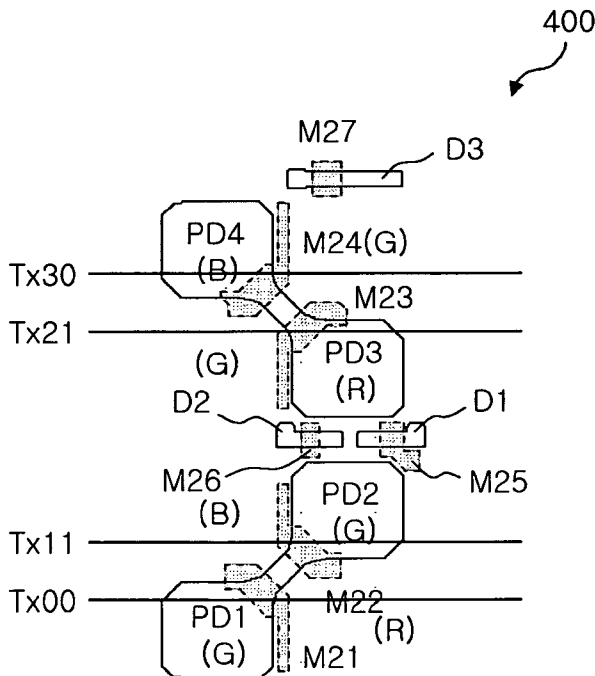
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(54) Title: 4T-4S STEP & REPEAT UNIT PIXEL AND IMAGE SENSOR INCLUDING THE UNIT PIXEL

【Fig. 4】



(57) Abstract: Disclosed are a 4T-4S step & repeat unit pixel used in an image sensor and an image sensor having the same. The 4T-4S step & repeat unit pixel has four diffusion area patterns for photodiodes and three diffusion area patterns for an image signal conversion circuit. An aperture ratio of the image sensor increases in maximum by using four photodiodes arranged in a diagonal direction from each other and three diffusion area patterns arranged between the photodiodes near their edges.

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**A. CLASSIFICATION OF SUBJECT MATTER****H01L 27/146(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 : H01L 27/146

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) "pixel", "share", "layout", "placement", "arrange", "photodiode", "filter", "imager"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007-0091190 A1 (Iwabuchi, S. et al.), 26 April 2007 (see the abstract; figure 4; and paragraphs [0056]-[0076])	1-7
A	US 2006-0038904 A1 (Kudoh, Y.), 23 February 2006 (see the abstract; figures 1, 3; and paragraphs [0029]-[0040])	1-7
A	KR 10-2006-0068479 A (SAMSUNG ELECTRONICS CO., LTD.), 21 June 2006 (see the abstract; figures 4-9; and page 5 line 1-page 7 line 26)	1-7
A	KR 10-2006-0062334 A (SAMSUNG ELECTRONICS CO., LTD.), 12 June 2006 (see the abstract; figures 2-4; and page 3 line 71-page 5 line 30)	1-7

 Further documents are listed in the continuation of Box C. See patent family annex.

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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KR 10-2006-0068479 A	21.06.2006	JP 2006-173634 A TW 282621 B	29.06.2006 11.06.2007
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