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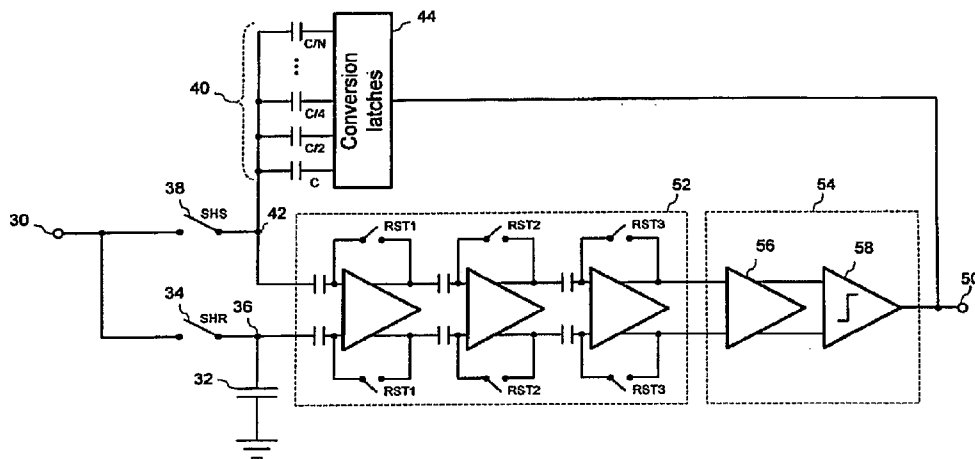
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(57) Abstract: An image sensor may be improved by using ADCs that compensate for the effect of comparator input offset on comparator decisions. Offset compensation may be implemented in an ADC by using an amplifier section between the input of the ADC and a comparator section of the ADC to amplify the signals supplied to the comparator inputs and thereby reduce the effect of comparator offset on the comparator decision. The comparator section may be an autozeroing comparator section that is capable of performing an offset reduction operation to store offset compensation values at capacitors provided at its inputs. The amplifier section may be an autozeroing amplifier section having one or more amplifier stages that are capable of performing an offset reduction operation to store offset compensation values at capacitors provided at their inputs. Offset compensation may also be implemented using an autozeroing comparator section without a preceding amplifier section. Related methods of operation cause the circuits to perform the offset reduction operations.

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**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US 06/48102

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(8) - H03M 1/12 (2007.01)  
 USPC - 341/155  
 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)  
 USPC - 341/155

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
 USPC - 341/155, 126; 257/222, 233 -- text search, see search terms below

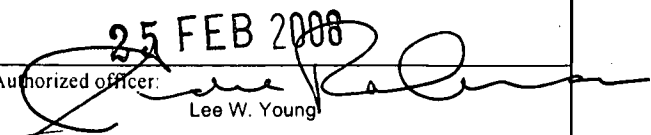
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 PubWEST(PGPB,USPT,USOC,EPAB,JPAB); DialogPRO(Engineering); Google Scholar  
 Search Terms Used: -- Please see extra sheet --

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,490,682 A (POULO) 25 December 1984 (25.12.1984), entire document especially Figs 1, 2, 4; col 2, ln 1-3, 12-24; col 3, ln 1-4, 12-17, 22-34, 46-49; col 4, ln 14, 16-17, 20, 29-31, 35-49, 57-67; col 5, ln 1-15, 28-32; col 6, ln 6.	1-50
Y	US 6,396,430 B1 (LI) 28 May 2002 (28.05.2002), entire document especially Figs 2-4; col 4, ln 2-3, 13-15, 37-38, 40, 52-56; col 5, ln 4-6, 50; col 6, ln 42-47.	1-50
Y	US 6,124,819 A (ZHOU et al.) 26 September 2000 (26.09.2000), entire document especially Figs 2-5, 14, 15; col 3, ln 59-60, 63-64; col 4, ln 4-7, 58-62; col 5, ln 26-67; col 6, ln 5; col 7, ln 42.	1-34 and 43-44

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 06 September 2007 (06.09.2007)	Date of mailing of the international search report <b>25 FEB 2008</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer:  Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

**INTERNATIONAL SEARCH REPORT**

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Continuation of B. FIELDS SEARCHED:

Search Terms Used:

PubWEST -- analog, digital, converter, ADC or A/D, offset or off-set or off set, reduce or reduction, reducing, autozero or autozeroing or auto zero or auto zeroing, pixel, image, reference, value or data or signal, amplifier or comparator, section or portion or part or stage

Google Scholar and DialogPRO -- amplify error signal, magnify error signal, reduce offset, ADC