Title: LEAKAGE IMPROVEMENT FOR A HIGH-VOLTAGE LATCH

Abstract: An improved CMOS high-voltage latch (100) stores data bits to be written to memory cells of a non-volatile memory has two cross-coupled CMOS inverters (102, 104). One inverter (104) has a pull-down leg that includes a pass-gate high-voltage NMOS transistor (116) connected between a latch output node and a second high-voltage, low-threshold NMOS pull-down transistor (118), connected to ground. A gate of the NMOS transistor (116) receives a standby signal with a logic HIGH value to turn on the NMOS transistor (116) when the CMOS latch (100) is in a data-loading mode of operation and during a high-voltage write mode of operation. The NMOS transistor (118) thereby limits the voltage across the second NMOS pull-down transistor (118) to less than the standby signal, reducing punch-through current and drain-to-substrate leakage from second NMOS pull-down transistor (118).
Published:  
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— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

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INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G11C 7/10 (2008.01)
USPC - 365/189.05

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: 365/189.05

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 365/185.08, 185 11, 185 23, 189.01; 7:11/100, 101, 104 (view text search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(PGPB,USPT,EPAB,JPAB), PCT OSP (Kaplinsky), Google Scholar
Search Terms: high-voltage data latches writing data nonvolatile memories, limiting leakage current from high voltage supply generator, on-chip charge pump circuit provide high voltage high-voltage data latches write operation etc

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 2006/0171 194 A1 (Lowrey et al.) 03 August 2006 (03.08.2006) entire document, especially Abstract, FIG.4A, 5A and 29 and para [0148], [0152], [0161], [0194], [0302], [0316], [0346], [0360] and [0362]</td>
<td>1, 5-8, and 10-12</td>
</tr>
<tr>
<td>A</td>
<td>US 6,188,246 B1 (Ogawa) 13 February 2001 (13 02 2001)</td>
<td>1-12</td>
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<tr>
<td>A</td>
<td>US 5,298,816 A (Kaplinsky) 29 March 1994 (29.03.1994)</td>
<td>1-12</td>
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</tbody>
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D Further documents are listed in the continuation of Box C. □

* Special categories of cited documents
  "A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search
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