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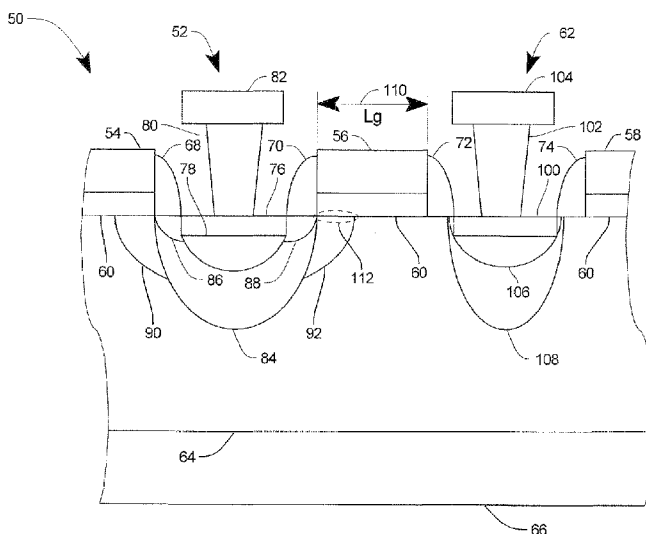
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(54) Title: SELF-ALIGNED COMPLEMENTARY LDMOS



(57) Abstract: The invention includes a laterally double-diffused metal-oxide semiconductor (LDMOS) having a reduced size, a high breakdown voltage, and a low on-state resistance. This is achieved by providing a thick gate oxide on the drain side of the device, which reduces electric field crowding in the off-state to reduce the breakdown voltage and forms an accumulation layer in the drift region to reduce the device resistance in the on-state. A version of the device includes a low threshold voltage version with a thin gate oxide on the source side of the device and a high threshold voltage version of the device includes a thick gate oxide on the source side. The LDMOS may be configured in an LNDMOS having an N type source or an LPDMOS having a P type source. The source of the device is fully aligned under the oxide spacer adjacent the gate to provide a large SOA, to reduce the device size and to reduce the device leakage.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/65822

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H01L 29/76 (2007.10)

USPC - 257/343

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: 257/343

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
438/527; 438/268; 257/341; (text search, see 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); Google, Google Scholar

Search Terms: LDMOS, MOS, lateral, well, trench, oxide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X - Y	US 6,413,822 B2 (WILLIAMS et al.) 02 July 2002 (02.07.2002), col 1, ln 7-24, col 2, ln 1-8, col 11, ln 51-61, col 19, ln 4 to col 20, ln 34, ln 1 to col 23, ln 33, Fig 23	1-31, 33, 34 ----- 32
Y	US 6,844,585 B1 (HOPPER et al.) 18 January 2005 (18.01.2005), col 2, ln 35-56	32
A	US 2005/0073003 A1 (TORNBAD et al.) 07 April 2005 (07.04.2005), entire document	1-34
A	US 2003/0178673 A1 (BHALLA et al.) 25 September 2003 (25.09.2003), entire document	1-34
A	US 2003/0080379 A1 (OIKAWA et al.) 01 May 2003 (01.05.2003), entire document	1-34
A	US 5,557,127 A (AJIT et al.) 17 September 1996 (17.09.1996), entire document	1-34

 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

"E" earlier application or patent but published on or after the international filing date

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"&" document member of the same patent family

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