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(54) Title: SELECT DEVICES INCLUDING AN OPEN VOLUME, MEMORY DEVICES AND SYSTEMS INCLUDING SAME, AND METHODS FOR FORMING SAME

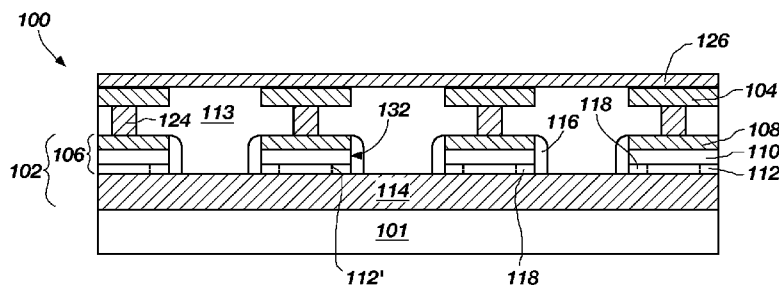


FIG. 1A

(57) Abstract: Select devices including an open volume that functions as a high bandgap material having a low dielectric constant are disclosed. The open volume may provide a more nonlinear, asymmetric I-V curve and enhanced rectifying behavior in the select devices. The select device may comprise, for example, a metal insulator insulator metal (MIIM) device. Various methods may be used to form select devices and memory systems including such select devices. Memory devices and electronic systems include such select devices.



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**A. CLASSIFICATION OF SUBJECT MATTER*****H01L 29/861(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)

H01L 29/861; H01L 21/00; H01L 21/8242; H01L 29/768; H01L 31/119

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

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: second, dielectric, metal, conductive, spacer, sidewell

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005-0062074 A1 (HSIANG, LAN LUNG) 24 March 2005 See abstract, paragraph [0016] to [0020] and figure 1.	1-15
A	US 2004-0201057 A1 (WAN-YIH LIEN et al.) 14 October 2004 See abstract, paragraph [0013] to [0015] and figure 4.	1-15
A	US 6350628 B1 (CHENG; HUANG-CHUNG et al.) 26 February 2002 See abstract, claim 9 and figure 2.	1-15
A	US 7091052 B2 (HAOCHIEH LIU) 15 August 2006 See abstract, column 4, line 57-61 and figure 4.	1-15

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

\* Special categories of cited documents:

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Information on patent family members

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