

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P2018TC648	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/CN2018/119908	International filing date (<i>day/month/year</i>) 07 December 2018	(Earliest) Priority Date (<i>day/month/year</i>)
Applicant Yangtze Memory Technologies Co., Ltd.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

the international application in the language in which it was filed.

a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (see Box No. II).

3. **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1A

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

b. none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2018/119908

A. CLASSIFICATION OF SUBJECT MATTER		
H01L 27/24(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		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
WPI, EPODOC, CNKI, CNPAT, IEEE: NAND, substrate, BSG, word lines, common source regions, trenches, memory, 3D, staircase		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 10141372 B2 (SAMSUNG ELECTRONICS CO., LTD.) 27 November 2018 (2018-11-27) description, column 1 line 29-column 5 line 10, column 16 line 51-column 17 line 46 and figures 4-24	1-20
A	US 2016233270 A1 (SANISK TECHNOLOGIES, INC.) 11 August 2016 (2016-08-11) the whole document	1-20
A	CN 101315936 A (PROMOS TECHNOLOGIES) 03 December 2008 (2008-12-03) the whole document	1-20
A	CN 101118907 A (POWERCHIP SEMICONDUCTOR CO., LTD.) 06 February 2008 (2008-02-06) the whole document	1-20
A	CN 106601751 A (MACRONIX INTERNATIONAL CO., LTD.) 26 April 2017 (2017-04-26) the whole document	1-20
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* 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 "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) "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 "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 "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 "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
21 August 2019		18 September 2019
Name and mailing address of the ISA/CN		Authorized officer
National Intellectual Property Administration, PRC 6, Xitucheng Rd., Jimen Bridge, Haidian District, Beijing 100088 China		BIAN,Zhen
Facsimile No. (86-10)62019451		Telephone No. 86-(10)-53961419

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2018/119908

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
US	10141372	B2	27 November 2018	KR	20160117854	A	11 October 2016
				CN	106024786	A	12 October 2016
				US	2019081105	A1	14 March 2019
US	2016233270	A1	11 August 2016	WO	2016126307	A1	11 August 2016
				EP	3254312	A1	13 December 2017
CN	101315936	A	03 December 2008	None			
CN	101118907	A	06 February 2008	None			
CN	106601751	A	26 April 2017	None			