

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2019/047389

A. CLASSIFICATION OF SUBJECT MATTER
 H01L 29/786(2006.01)i; H01L 21/336(2006.01)i
 FI: H01L29/78 618E; H01L29/78 618B; H01L29/78 618A
 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)
 H01L29/786; H01L21/336

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan	1922-1996
Published unexamined utility model applications of Japan	1971-2020
Registered utility model specifications of Japan	1996-2020
Published registered utility model applications of Japan	1994-2020

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2018/061969 A1 (SHARP CORP.) 05.04.2018 (2018-04-05) paragraphs [0041]-[0118], fig. 1, 4	1-8
X Y	JP 2018-190949 A (SEMICONDUCTOR ENERGY LABORATORY CO., LTD.) 29.11.2018 (2018-11-29) paragraphs [0053]-[0324], fig. 5, 18	1-3, 6-8 4, 5
Y	JP 2016-74580 A (SEMICONDUCTOR ENERGY LABORATORY CO., LTD.) 12.05.2016 (2016-05-12) paragraph [0595]	4, 5
A	WO 2009/157535 A1 (IDEMITSU KOSAN CO., LTD.) 30.12.2009 (2009-12-30)	1-8

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

* 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
"E" earlier application or patent but published on or after the international filing date	"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
"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 07 February 2020 (07.02.2020)	Date of mailing of the international search report 18 February 2020 (18.02.2020)
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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2019/047389

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
WO 2018/061969 A1	05 Apr. 2018	US 2019/0326443 A1 paragraphs [0050]- [0126], fig. 1, 4C CN 109791949 A	
JP 2018-190949 A	29 Nov. 2018	US 2018/0076231 A1 paragraphs [0109]- [0380], fig. 5A-1- B-3, 18 WO 2018/047067 A1 TW 201826509 A CN 109643735 A KR 10-2019-0045930 A	
JP 2016-74580 A	12 May 2016	US 2015/0243738 A1 paragraph [0671] CN 104867981 A KR 10-2015-0099467 A TW 201544458 A	
WO 2009/157535 A1	30 Dec. 2009	US 2011/0180392 A1 CN 102131953 A KR 10-2011-0027805 A TW 201012958 A	