

INTERNATIONAL SEARCH REPORT

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| International application No. PCT/JP2019/046586 |
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A. CLASSIFICATION OF SUBJECT MATTER
 Int. Cl. H02J7/00 (2006.01) i, G01R31/382 (2019.01) i, H01M10/48 (2006.01) i, H02J7/02 (2016.01) 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)
 Int. Cl. H02J7/00, G01R31/382, H01M10/48, H02J7/02

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 1971-2019
 Registered utility model specifications of Japan 1996-2019
 Published registered utility model applications of Japan 1994-2019

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 A | WO 2013/051156 A1 (HITACHI VEHICLE ENERGY, LTD.) 11 April 2013, paragraphs [0020], [0021], [0094]-[0104], [0109], fig. 8, 9 & US 2014/0312913 A1, paragraphs [0032], [0033], [0103]-[0116], fig. 8, 9 & EP 2765434 A1 | 1, 4 2-3, 5-8 |
| A | JP 2012-222913 A (HITACHI, LTD.) 12 November 2012, entire text, all drawings (Family: none) | 1-8 |
| A | JP 2011-181392 A (OKI SEMICONDUCTOR CO., LTD.) 15 September 2011, entire text, all drawings & US 2011/0215810 A1, entire text, all drawings | 1-8 |
| A | WO 2018/131338 A1 (HITACHI, LTD.) 19 July 2018, entire text, all drawings (Family: none) | 1-8 |

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

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| * 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 |
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| Date of the actual completion of the international search 11.12.2019 | Date of mailing of the international search report 24.12.2019 |
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| Name and mailing address of the ISA/ Japan Patent Office 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan | Authorized officer Telephone No. |
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INTERNATIONAL SEARCH REPORTInternational application No.
PCT/JP2019/046586

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| A | US 2017/0346308 A1 (INFINEON TECHNOLOGIES AG) 30 November 2017, entire text, all drawings & DE 102017111907 A1 & CN 107452992 A | 1-8 |