

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

31 October 2019 (31.10.2019)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/054788

A. CLASSIFICATION OF SUBJECT MATTER
 INV. H03K17/082
 ADD. H03K17/90 G01R15/18 G01R15/20 H02M7/00

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)
 H03K G01R G06F H02M H03F

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)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2017 158407 A (NGK SPARK PLUG CO) 7 September 2017 (2017-09-07)	1-4,13
A	paragraph [0007]; figures 1,2,4,5a, 7a paragraph [0011] paragraph [0032] - paragraph [0033] -----	5-10
X	EP 3 054 577 A1 (TOYOTA MOTOR CO LTD [JP]) 10 August 2016 (2016-08-10)	1,2,5,7, 8,10
Y	paragraph [0016] - paragraph [0020]; figures 1, 3A, 3C paragraph [0024] - paragraph [0031] paragraph [0007] ----- -/--	6,9,11, 15-21

Further documents are listed in the continuation of Box C.

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 17 September 2019	Date of mailing of the international search report 26/09/2019
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer João Carlos Silva
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/054788

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KARRER N ET AL: "HOKA: a new isolated current measuring principle and its features", CONFERENCE RECORD OF THE 1999 IEEE INDUSTRY APPLICATIONS CONFERENCE. THIRTY-FORTH IAS ANNUAL MEETING (CAT. NO.99CH36370), IEEE, IEEE PISCATAWAY, NJ, USA, vol. 3, 3 October 1999 (1999-10-03), pages 2121-2128, XP010355140, DOI: 10.1109/IAS.1999.806028 ISBN: 978-0-7803-5589-7	6,9
A	the whole document	1-5,7,8, 10
A	----- JP 2017 092670 A (MITSUBISHI ELECTRIC CORP) 25 May 2017 (2017-05-25) figure 1	1-10,13
Y	----- EP 3 118 995 A1 (LSIS CO LTD [KR]) 18 January 2017 (2017-01-18) paragraph [0049] - paragraph [0054]; figure 2	12,14
Y	----- US 2017/162466 A1 (SAWADA HIDEKI [JP]) 8 June 2017 (2017-06-08)	15,16,19
A	paragraph [0031]; figures 1,3A,3B,3C,5,10B paragraph [0062]	1-14,17, 18,20,21
Y	----- GB 2 283 376 A (FUJI ELECTRIC CO LTD [JP]) 3 May 1995 (1995-05-03)	11,15-21
A	page 3, paragraph 2; figures 1a,1b,1c	1-10
Y	----- EP 2 157 689 A1 (AISIN AW CO [JP]) 24 February 2010 (2010-02-24) abstract; figures 1-2	12,14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2019/054788

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10, 13

An electronic power switch drive module comprising an electronic power switch drive and a current transducer suitable for measuring the output current of a power semiconductor module and the embodiments of said transducer.

2. claims: 11, 15-21

A power semiconductor unit comprising an electronic power switch drive module and a power semiconductor module and constructional connections between same

3. claims: 12, 14

An electronic power switch drive module comprising a signal or data interface

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2019/054788

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2017158407	A	07-09-2017	NONE

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			EP 2157689 A1 24-02-2010
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