

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
26 February 2004 (26.02.2004)

PCT

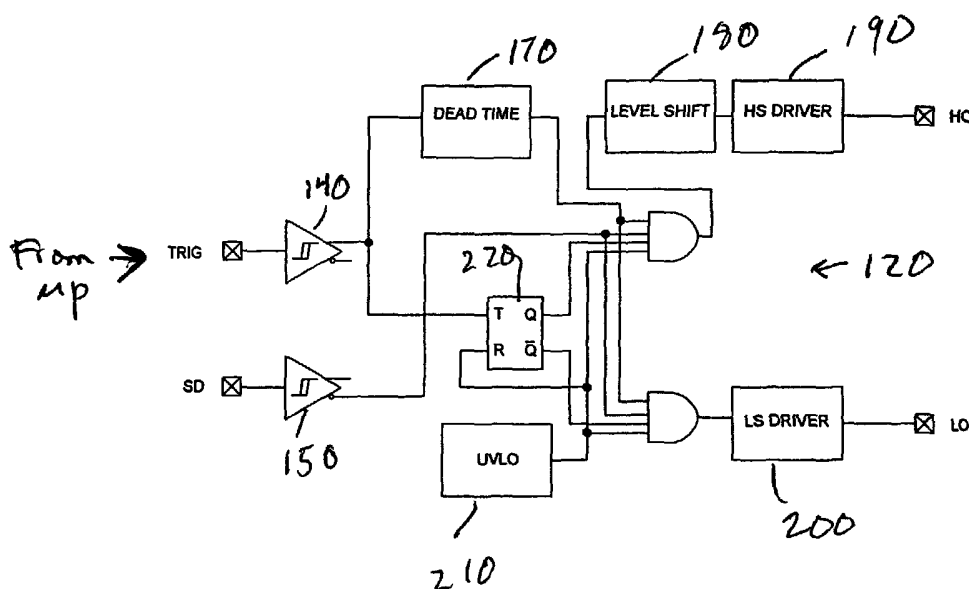
(10) International Publication Number  
WO 2004/017370 A3

- (51) International Patent Classification<sup>7</sup>: **H05B 37/02**
- (21) International Application Number: PCT/US2003/025371
- (22) International Filing Date: 13 August 2003 (13.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
 

60/403,731	14 August 2002 (14.08.2002)	US
10/618,487	11 July 2003 (11.07.2003)	US
- (71) Applicant: INTERNATIONAL RECTIFIER CORPORATION [US/US]; 233 Kansas Street, El Segundo, CA 90245 (US).
- (72) Inventor: GREEN, Peter; 1310 S. Catalina Avenue, #209, Redondo Beach, CA 90277 (US).
- (74) Agents: DUJMICH, Louis, C. et al.; Ostrolenk, Faber, Gerb & Soffen, LLP, 1180 Avenue of the Americas, New York, NY 10036 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published: — with international search report
- (88) Date of publication of the international search report: 10 September 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DRIVER IC FOR USE WITH SIMPLE MICROCONTROL



(57) Abstract: A driver circuit (120) for driving a switching circuit driving a load, e.g., a gas discharge lamp (20), the drive circuit comprising an input trigger circuit (Fig. 2) receiving a pulsed input signal for controlling the generation of two drive signals, a first drive signal driving a high side switch (190) of a half bridge switching circuit and a second drive signal driving a low side switch (200) of the half bridge switching circuit, a circuit for providing a dead time between the first and second drive signals whereby both the first and second drive signals are substantially zero, the input trigger circuit generating a control signal for controlling the generation of the first and second drive signals based on a characteristic of the pulsed input signal and first and second drive circuits for providing the first and second drive signals.

WO 2004/017370 A3

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/25371

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(7) : H05B 37/02  
 US CL : 315/209R, 210, 211, 224, 225, 291, 307, 313, 360;327/109  
 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)  
 U.S. : 315/209R, 210, 211, 224, 225, 291, 307, 313, 360; 327/109

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)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,563,536 A (HOSL et al) 8 October 1996 (08.10.1996), whole document.	1-28
A	US 6,285,138 B1 (KATAOKA et al) 04 September 2001 (04.09.2001), Figs. 9-11, 31, 34-35, 41-46, cols. 13, 15-17.	1-28
A	US 6,281,641 B1 (CHEN et al) 28 August 2001 (28.08.2001), whole document.	1-28
A	US 6,552,606 B1 (VELTMAN et al) 22 April 2003 (22.04.2003), whole document	1-28

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

* Special categories of cited documents:	"T"
"A" document defining the general state of the art which is not considered to be of particular relevance	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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"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: 22 February 2004 (22.02.2004)  
 Date of mailing of the international search report: 04 MAY 2004

Name and mailing address of the ISA/US: Mail Stop PCT, Attn: ISA/US, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450, Facsimile No. (703)305-3230  
 Authorized officer: *Nora M. Dinh*  
 Trinh Vo Dinh  
 Telephone No. 571-272-1821