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(54) Title (EN): DEVICE FOR DRIVING SEMICONDUCTOR SWITCH

(54) Title (FR): DISPOSITIF DE PILOTAGE DE COMMUTATEUR À SEMI-CONDUCTEUR

(54) Title (KO): 반도체 스위치의 구동 장치

(57) Abstract:

(EN): The present invention relates to a technology for driving a semiconductor switch element and, particularly, to a technology for enabling a relay circuit to be easily replaced by a semiconductor switch and a driving device to be implemented by one semiconductor element (one chip). The present invention comprises: a semiconductor switch, which performs a switching operation by means of a gate driving voltage so as to transmit, to a load connected to a second switch terminal, main power connected to a first switch terminal; a control signal generation unit, which detects a change in control signal input power so as to output a control signal according thereto, wherein the control signal is generated and outputted on the basis of a lower negative voltage between a negative voltage of the main power and a negative voltage of the control signal input power; a control signal detection unit, which detects the control signal so as to output a driving control signal according thereto; a gate driving voltage generation unit driven by means of the driving control signal so as to output the gate driving voltage (GDV); and an internal power generation unit, which receives the main power so as to generate a power source voltage required for the semiconductor switch, the control signal generation unit, the control signal detection unit, and the gate driving voltage generation unit when the semiconductor switch is in a turn-off state.

(FR): La présente invention concerne une technologie de pilotage d'élément de commutation à semi-conducteur et, en particulier, une technologie permettant de remplacer facilement un circuit de relais par un commutateur à semi-conducteur et un dispositif de pilotage devant être mis en œuvre par un élément à semi-conducteur (une puce). La présente invention comprend : un commutateur à semi-conducteur, qui effectue une opération de commutation au moyen d'une tension d'attaque de grille de façon à transmettre, à une charge connectée à une seconde borne de commutation, une puissance principale connectée à une première borne de commutation ; une unité de génération de signal de commande, qui détecte un changement dans une puissance d'entrée de signal

de commande de façon à délivrer en sortie un signal de commande conformément à cette dernière, le signal de commande étant généré et délivré sur la base d'une tension négative inférieure entre une tension négative de la puissance principale et une tension négative de la puissance d'entrée de signal de commande ; une unité de détection de signal de commande, qui détecte le signal de commande de façon à délivrer en sortie un signal de commande de pilotage conformément à ce dernier ; une unité de génération de tension d'attaque de grille pilotée au moyen du signal de commande de pilotage de façon à délivrer en sortie la tension d'attaque de grille (GDV) ; et une unité de génération puissance interne, qui reçoit la puissance principale de façon à générer une tension de source d'alimentation requise pour le commutateur à semi-conducteur, l'unité de génération de signal de commande, l'unité de détection de signal de commande et l'unité de génération de tension d'attaque de grille lorsque le commutateur à semi-conducteur est dans un état hors circuit.

(KO): 본 발명은 반도체 스위치 소자의 구동 기술에 관한 것으로, 특히 릴레이 회로를 반도체 스위치로 용이하게 대체할 수 있도록 하고 구동장치를 하나의 반도체 소자(One Chip)로 구현할 수 있도록 한 기술에 관한 것이다. 이러한 본 발명은 게이트구동전압에 의해 스위칭 동작하여 제1스위치 단자에 연결된 메인전원을 제2스위치 단자에 연결된 부하에 전달하는 반도체 스위치; 제어신호입력전원의 변화를 검출하여 그에 따른 제어신호를 출력함에 있어서, 상기 메인전원의 부극성 전압과 상기 제어신호입력전원의 부극성 전압 중에서 낮은 부극성 전압을 기준으로 제어신호를 생성하여 출력하는 제어신호 발생부; 상기 제어신호를 감지하여 그에 따른 구동제어신호를 출력하는 제어신호 검출부; 상기 구동제어신호에 의해 구동되어 상기 게이트구동전압(GDV)을 출력하는 게이트구동전압 발생부; 및 상기 반도체 스위치가 턴오프 상태에 있을 때 상기 메인전원을 공급받아 상기 반도체 스위치, 상기 제어신호 발생부, 상기 제어신호 검출부 및 상기 게이트구동전압 발생부에서 필요로 하는 전원전압을 생성하는 내부전원 발생부를 포함하는 것을 특징으로 한다.

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