Title (en)

SEMICONDUCTOR COMPONENT WITH A CONTROL ELECTRODE FOR MODULATING THE CONDUCTIVITY OF A CHANNEL AREA BY MEANS OF A MAGNETORESISTOR STRUCTURE

Title (de)

HALBLEITERBAUELEMENT MIT EINER STEUERELEKTRODE ZUR MODULATION DER LEITFÄHIGKEIT EINES KANALBEREICHS UNTER VERWENDUNG EINER FELDPLATTENSTRUKTUR

Title (fr)

COMPOSANT A SEMI-CONDUCTEUR AVEC ELECTRODE DE COMMANDE SERVANT A MODULER LA CONDUCTIVITE D'UNE ZONE CANAL PAR L'UTILISATION D'UNE STRUCTURE A MAGNETORESISTANCE

Publication

EP 0925610 A1 19990630 (DE)

Application

EP 97932757 A 19970710

Priority

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Abstract (en)

[origin: WO9802925A1] In known MOS-controlled power semiconductors the parasitic properties of the so-called short-circuit feedback capacitance have a considerably negative effect on the switching performance of the device. Although reducing the size of the gate-drain/gate-collector overlap surface and therefore the short-circuit feedback capacitance improves high frequency performance it also impairs the electric strength of the structure. The gate electrode (9) of the proposed component, which has a small surface, only covers the substrate (4, 5) on one length Lgd APPROX Ldep (Ldep: = the width of the space charge region in the substrate). Embedded in the gate oxide (10, 11), at a distance from the gate electrode (9) is another conductive electrode (13) which is connected to the source metallic coating (8) and stretches to the edge of the symmetrical unit (1). It provides a comparatively homogeneous field distribution in the edge area of the gate electrode (9) and thus prevents the electric field strengths in the semiconductor from reaching the critical value of approximately 10<5> V/cm which triggers the ionisation by impact. The invention allows the production of MOSFET's and IGBT's with good dynamic properties and higher reverse voltage.

IPC 1-7

H01L 29/78; H01L 29/739; H01L 29/06

IPC 8 full level

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CPC (source: EP US)

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