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DOUBLE IMPLANTED LATERALLY DIFFUSED MOS DEVICE AND METHOD THEREOF

Abstract of the Disclosure

An NMOS transistor (10) has a source (14) and a drain (20) composed of n+ type of semiconductor material. A substrate region (16) composed of a p-type of semiconductor material is disposed between the source and the drain. A gate region (30) is disposed above the substrate region and between the source region and the drain region. A first implant region (32) is disposed adjacent to the source region and the gate region. The first implant region is composed of p type of semiconductor material with a first doping concentration. A second implant region (34) is disposed between the first implant region and the substrate. The second implant region is composed of p type of semiconductor material with a second doping concentration. The channel doping profile (36,38) first and second implant regions is tailored to obtain the optimum internal electric field to maximize device transconductance, while simultaneously controlling the device threshold voltage and punch through characteristics.

FIG. 2 accompanies this abstract.