

Title (en)
BIPOLAR-TRANSISTOR AND METHOD FOR THE PRODUCTION OF A BIPOLAR-TRANSISTOR

Title (de)
BIPOLAR-TRANSISTOR UND VERFAHREN ZUR HERSTELLUNG EINES BIPOLAR-TRANSISTORS

Title (fr)
TRANSISTOR BIPOLAIRE ET PROCEDE DE PRODUCTION D'UN TRANSISTOR BIPOLAIRE

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Abstract (en)
[origin: WO2005098960A2] The invention relates to NPN and PNP bipolar transistors and to a method for the production thereof, said transistors being characterised by a particularly high collector-emitter and collector-base blocking voltage. The blocking voltage is increased by a particular doping profile. An NPN bipolar transistor comprises a p-doped substrate (1), a trench n-doped layer (3) forming the collector, a p-doped layer (7) which is arranged above the trench n-doped layer and is made of a base and an n-doped layer which is arranged within the p-doped layer and forms an emitter of the transistor. A spatial charge area (RLZ 1) is formed between the p-doped layer and the trench n-doped layer and a second spatial charge area (RLZ 2) is formed between the trench n-doped layer and the p-doped substrate, which expands in the vertical direction on the collector when the transistor is operated with an increasing potential. The trench n-doped layer comprises a doping profile in such a manner that when the transistor is operated with an increasing potential, the first and the second spatial charge area expand on the collector, transversing the entire depth of the trench n-doped layer prior to the critical field strength for a breakthrough being reached between the collector and emitter.

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