

**TITLE OF THE INVENTION: SEMICONDUCTOR STRUCTURE BASED ON
SILICON CARBIDE FOR POWER APPLICATIONS AND ASSOCIATED
MANUFACTURING METHOD**

5 Abstract:

The present invention relates to a semiconductor structure based on silicon carbide, comprising: - a working layer made of monocrystalline silicon carbide having a first dopant concentration that is uniform over its thickness, - a carrier
10 substrate made of polycrystalline silicon carbide having a second dopant concentration that is uniform over its thickness and a resistivity of less than or equal to 10 mohm.cm, the second concentration being related to the first concentration by the following relationship: $C_2 > N_2 \times \exp(-C_1/N_1)$ with C_1 the first concentration, C_2 the second concentration, $N_1 = 2.85.10^{18} \text{ cm}^{-3}$ and $N_2 =$
15 $5.40.10^{20} \text{ cm}^{-3}$, - an interface zone, between the carrier substrate and the working layer, comprising nodules and regions of direct contact between the working layer and the carrier substrate, the nodules comprising a metal or semiconductor material other than silicon carbide, the interface zone having an average resistivity of less than or equal to 0.01 mohm.cm², a dopant
20 concentration profile along a thickness of the semiconductor structure: - being in the form of a step, and - being devoid of a doping peak in the interface zone, or - exhibiting a doping peak in the interface zone, the extremum of which corresponds to a third dopant concentration equal to the second dopant concentration to within plus or minus 10%. The invention also relates to a
25 method for manufacturing such a semiconductor structure.

Fig. 1