

**SILICON CARBIDE METAL OXIDE SEMICONDUCTOR FIELD
EFFECT TRANSISTOR AND MANUFACTURING METHOD THEREOF**

ABSTRACT

The invention provides a method for manufacturing a silicon carbide metal-oxide-semiconductor field-effect transistor, which includes the following steps:

5 oxide-semiconductor field-effect transistor, which includes the following steps:
providing a SiC substrate; forming an N-type SiC epitaxial layer with a top surface on the SiC substrate; forming two doped structures in the N-type SiC epitaxial layer adjacent to the top surface, wherein each doped structure includes a P-type well, an N⁺ doped region, and a P⁺ doped region, the N⁺ doped region

10 is located in the P-type well, and the P⁺ doped region is located in the P-type well and adjacent to the N⁺ doped region; depositing a silicon-rich nitride film on the top surface; depositing a gate oxide layer on the silicon-rich nitride film, wherein the gate oxide layer and the N-type SiC epitaxial layer are insulated by the silicon-rich nitride film; performing a post-oxidation annealing process for the gate oxide

15 layer; and forming a gate structure on the gate oxide layer.

(Figure 1)