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**KODAMA**(10) **Pub. No.: US 2024/0213123 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **SEMICONDUCTOR DEVICE**(71) Applicant: **DENSO CORPORATION**, Kariya-city  
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**ABSTRACT**

A semiconductor device includes: a semiconductor element having a first main electrode and a second main electrode; a first wiring member electrically connected to the first main electrode; a second wiring member electrically connected to the second main electrode; and a conductive spacer interposed between the semiconductor element and the first wiring member. The conductive spacer has an end surface facing the semiconductor element and a side surface continuous with the end surface. The side surface has a recess open in the end surface and located adjacent to a pad in a plan view. The side surface has a roughened region in which a roughened oxide film is formed excluding an inner surface of the recess, and a non-roughened region, in which the roughened oxide film is not formed, on the inner surface of the recess.

