

(12) **United States Patent**
Iijima et al.

(10) **Patent No.:** **US 10,374,044 B2**
(45) **Date of Patent:** **Aug. 6, 2019**

(54) **SEMICONDUCTOR DEVICE, INVERTER CIRCUIT, DRIVING DEVICE, VEHICLE, AND ELEVATOR**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **16/059,235**

(22) Filed: **Aug. 9, 2018**

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(65) **Prior Publication Data**
US 2019/0198619 A1 Jun. 27, 2019

(57) **ABSTRACT**

(30) **Foreign Application Priority Data**
Dec. 21, 2017 (JP) 2017-244584

A semiconductor device of an embodiment includes a silicon carbide layer having a first plane and a second plane; a trench having a first side face, a second side face, and a bottom face; a first silicon carbide region of a first conductivity type; a second silicon carbide region of a second conductivity type, the third silicon carbide region and the second silicon carbide region sandwiching the trench; a sixth silicon carbide region of a second conductivity type in contact with the second side face and the bottom face; and a gate electrode in the trench. The first side face has a first region having a first inclination angle. The off angle of the first region with respect to a {0-33-8} face is no more than 2 degrees. A second inclination angle of the second side face is larger the first inclination angle.

(51) **Int. Cl.**
H01L 29/16 (2006.01)
H01L 21/02 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC **H01L 29/1608** (2013.01); **H01L 21/02529** (2013.01); **H01L 21/045** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC H01L 29/1608; H01L 29/66068; H01L 29/086; H01L 29/7813; H01L 29/66734;
(Continued)

10 Claims, 22 Drawing Sheets

