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(54) **SEMICONDUCTOR DEVICE, SEMICONDUCTOR DEVICE MANUFACTURING METHOD, AND ELECTRONIC DEVICE**

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(57) **ABSTRACT**

A semiconductor device has a semiconductor layer including a channel layer containing indium (In), gallium (Ga), and arsenic (As) and an electron supply layer laminated over the channel layer and containing In, Al, and As. A source electrode and a drain electrode are formed on a surface side of the semiconductor layer, and a gate electrode is formed between them. A positively charged insulating film containing aluminum oxide (Al_xO_y) (y/x<3/2) having oxygen vacancies is formed on the source electrode side from the gate electrode on the surface side of the semiconductor layer. A part of the insulating film may function as a gate insulating film. The density of a two dimensional electron gas (2DEG) in the channel layer on the source electrode side from the gate electrode is relatively higher than that of the 2DEG on the drain electrode side therefrom because of the insulating film.