

SEMICONDUCTOR DEVICE AND ITS MANUFACTURING METHOD
ABSTRACT OF THE DISCLOSURE

It is intended to provide a semiconductor device and its manufacturing method in which a high-resistance region maintaining a high resistance even under high temperatures can be made in a nitride III-V compound semiconductor layer having an electric conductivity by ion implantation. After a nitride III-V compound semiconductor layer having an electric conductivity is grown, a high resistance region is formed in the nitride III-V compound semiconductor layer by locally implanting boron ions therein. The amount of implanted boron is preferably not less than $1/30$, or more preferably not less than $1/15$, of the carrier concentration of the nitride III-V compound semiconductor layer. The high-resistance region is used as a device isolating region of an electron moving device or as a current blocking layer of a semiconductor laser.

Figure 4