

GaN Based Schottky Diode For Read/Write Memory And The Method Of Forming Gd Schottky Contact

Title:

GaN based high electron mobility transistor for read/write memory with Gd schottky contact

The present invention discloses a non-volatile memory device using AlGa_N/Ga_N high electron mobility transistor (HEMT). AlGa_N/Ga_N HEMTs are fabricated and characterized with Gd as the Schottky gate. A capacitance-voltage hysteresis is observed, which is found to be reproducible across devices processed and measured under various conditions. The hysteretic nature of the characteristics gives rise to a voltage dependent capacitance window. Deep level traps due to Gd may be potentially responsible for the observed characteristics. The capacitance window is found to remain the same for a very long period of time. AlGa_N/Ga_N high electron mobility transistors (HEMTs) with Gd/AlGa_N Schottky contact as the gate translate the capacitance window to an equivalent change in drain to source current, which can be used as a memory device.

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