ABSTRACT

NITRIDE-BASED SEMICONDUCTOR EPITAXIAL SUBSTRATE, METHOD OF MANUFACTURING THE SAME, AND HEMT SUBSTRATE

The present invention provides a nitride-based semiconductor epitaxial substrate capable of ensuring electrical insulation between a device layer and GaN single crystal substrate, and of suppressing diffusion of conductivity controlling Mg to the device layer, a method of manufacturing the substrate, and an HEMT substrate. The nitride-based semiconductor epitaxial substrate of the present invention includes a GaN single crystal substrate, an Mg-doped first layer which is epitaxially grown on one side of the GaN single crystal substrate and which is composed of $Al_xGa_yIn_{1-x-y}N$ ($y > 0$), and an undoped insulating second layer which is epitaxially grown on one side of the first layer and which is composed of $Al_xGa_yIn_{1-x-y}N$ ($y > 0$).

Figure 1

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