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Kidoguchi et al.

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(54) **METHOD OF FABRICATING NITRIDE SEMICONDUCTOR, METHOD OF FABRICATING NITRIDE SEMICONDUCTOR DEVICE, NITRIDE SEMICONDUCTOR DEVICE, SEMICONDUCTOR LIGHT EMITTING DEVICE AND METHOD OF FABRICATING THE SAME**

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Apr. 21, 2000 (JP) 2000-120761

(51) **Int. Cl.**[7] **H01L 21/00**
(52) **U.S. Cl.** **438/46**; 438/44; 438/47; 438/604; 257/103
(58) **Field of Search** 438/37–44, 46–48, 438/604, 606, 607, 687, 589, 51; 257/103

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(57) **ABSTRACT**

The method of fabricating a nitride semiconductor of this invention includes the steps of forming, on a substrate, a first nitride semiconductor layer of $Al_uGa_vIn_wN$, wherein $0 \leqq u, v, w \leqq 1$ and $u+v+w=1$; forming, in an upper portion of the first nitride semiconductor layer, plural convexes extending at intervals along a substrate surface direction; forming a mask film for covering bottoms of recesses formed between the convexes adjacent to each other; and growing, on the first nitride semiconductor layer, a second nitride semiconductor layer of $Al_xGa_yIn_zN$, wherein $0 \leqq x, y, z \leqq 1$ and $x+y+z=1$, by using, as a seed crystal, C planes corresponding to top faces of the convexes exposed from the mask film.

87 Claims, 43 Drawing Sheets

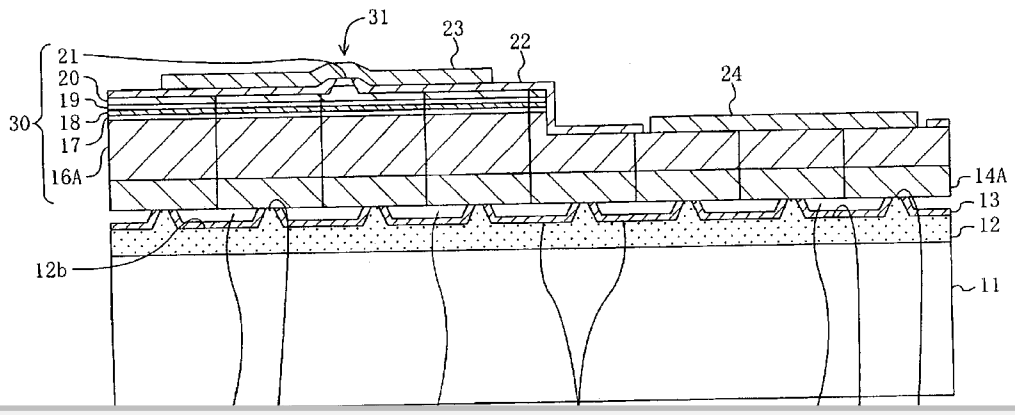

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FIG. 1

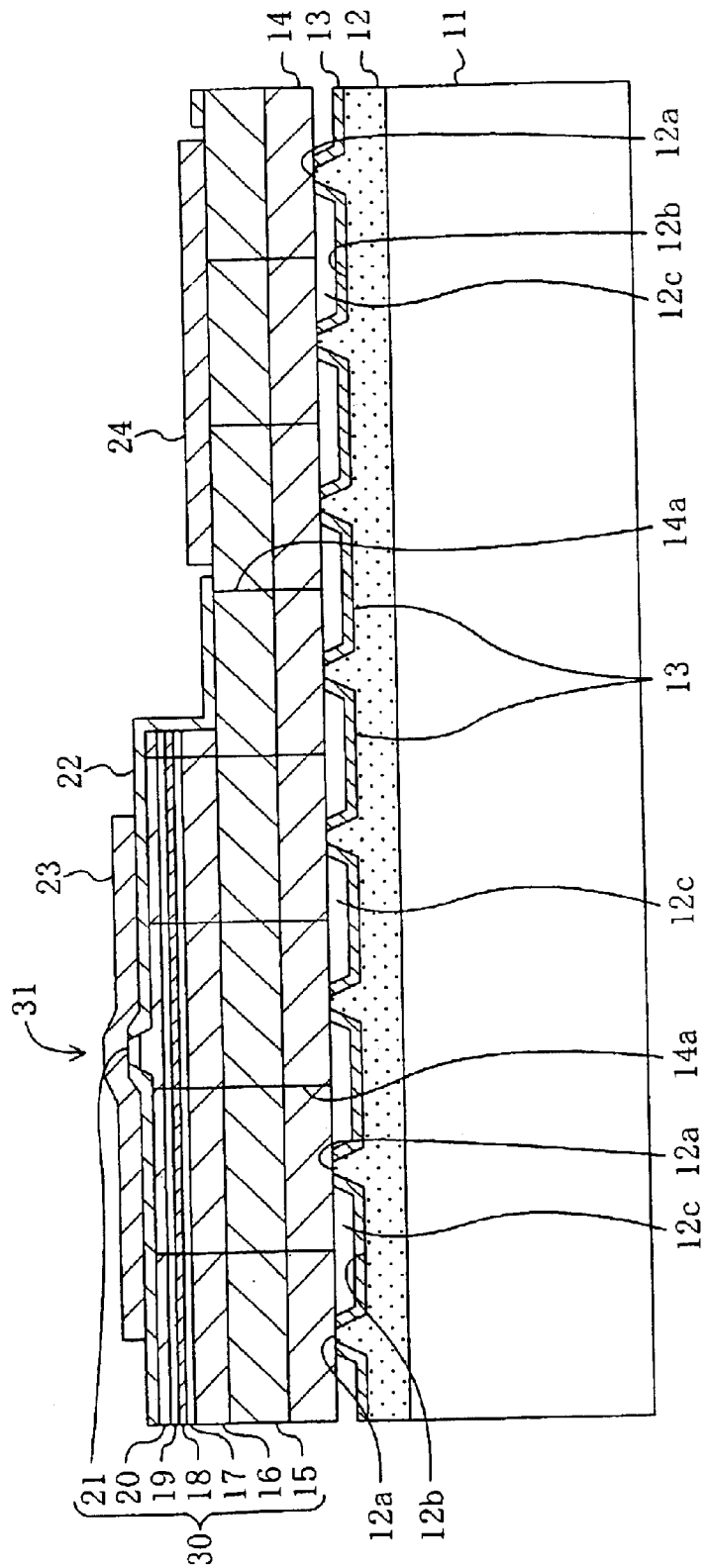


FIG. 2(a)

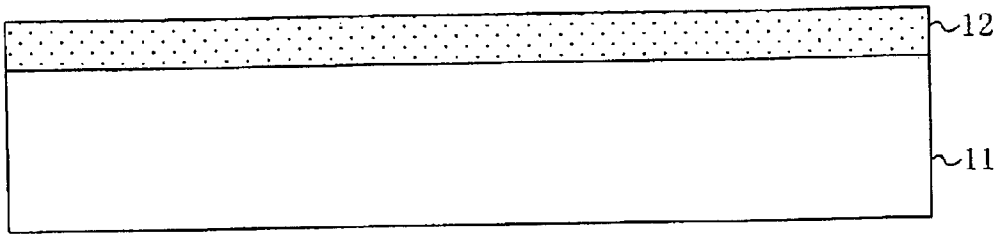


FIG. 2(b)

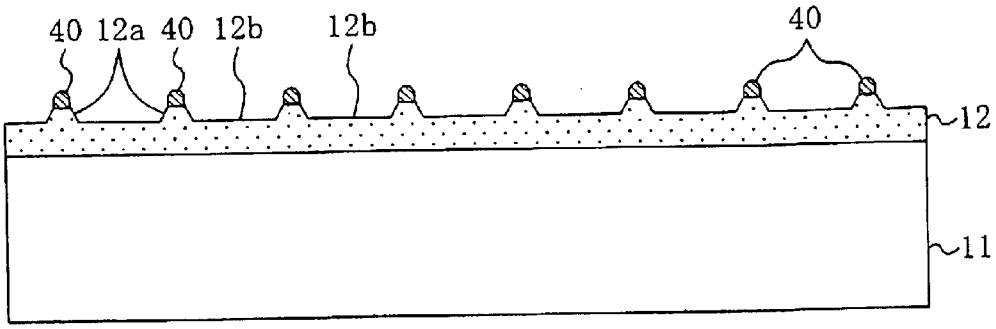


FIG. 3(a)

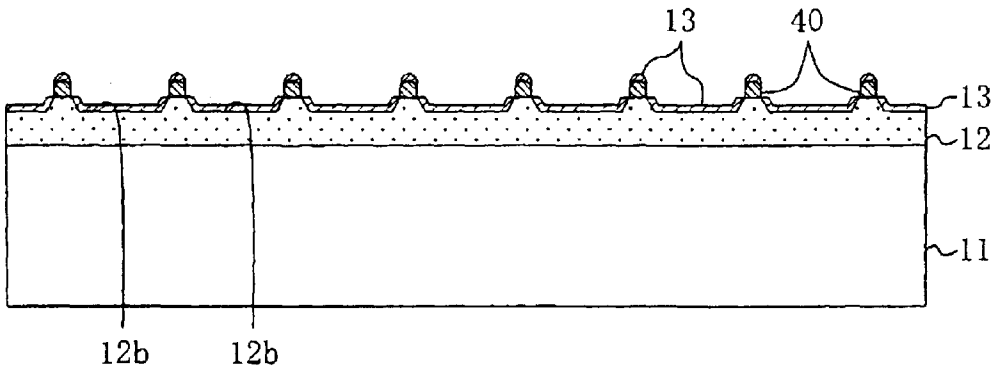
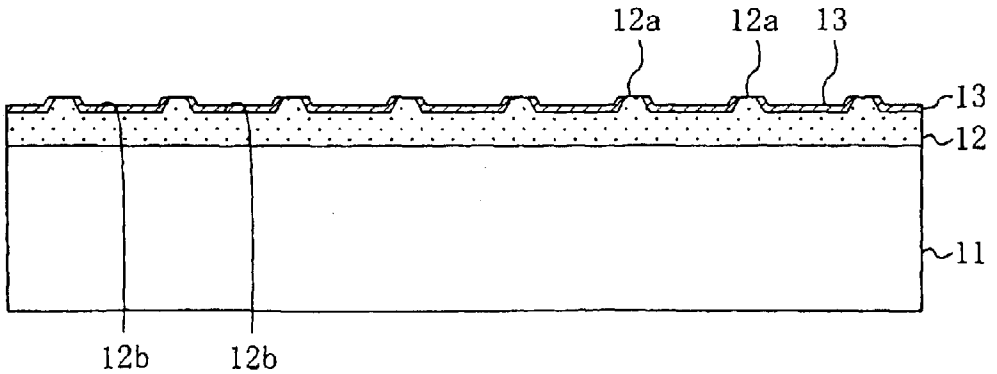


FIG. 3(b)



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