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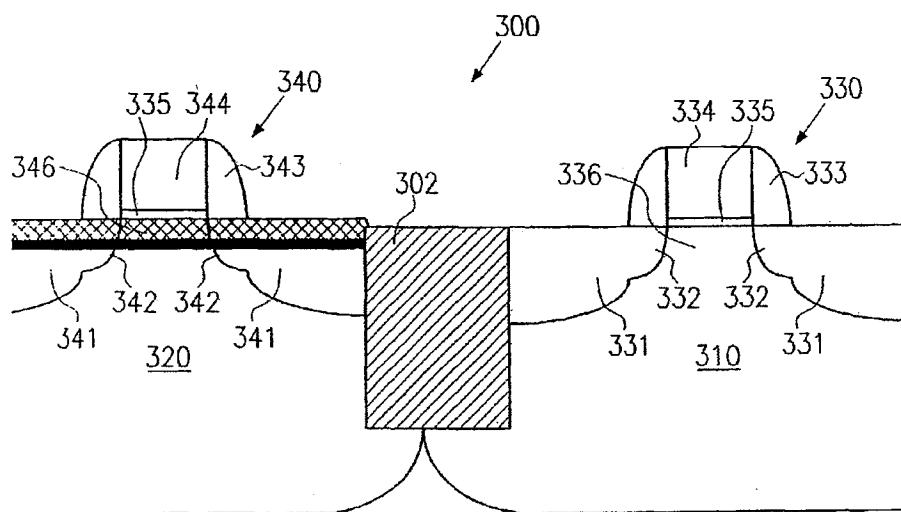
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(54) Title: SEMICONDUCTOR DEVICE HAVING A RETROGRADE DOPANT PROFILE IN A CHANNEL REGION AND METHOD FOR FABRICATING THE SAME



(57) Abstract: An epitaxially grown channel layer is provided on a well structure after ion implantation steps and heat treatment steps are performed to establish a required dopant profile in the well structure. The channel layer may be undoped or slightly doped, as required, so that the finally obtained dopant concentration in the channel layer is significantly reduced compared to a conventional device to thereby provide a retrograde dopant profile in a channel region of a field effect transistor. Additionally, a barrier diffusion layer may be provided between the well structure and the channel layer to reduce up-diffusion during any heat treatments carried out after the formation of the channel layer. The final dopant profile in the channel region may be adjusted by the thickness of the channel layer, the thickness and the composition of the diffusion barrier layer and any additional implantation steps to introduce dopant atoms in the channel layer.



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