

ABSTRACT

A hybrid substrate which has an SOI structure having a good silicon active layer, and which is free from defects such as partial separation of the silicon active layer at the outer peripheral portion of the substrate is obtained without trimming the outer periphery of the substrate by: preparing an SOI substrate which is obtained by sequentially laminating a first silicon oxide film and a silicon active layer in this order on a silicon substrate, and wherein a terrace portion that does not have the silicon active layer is formed in the outer peripheral portion of the silicon substrate surface; forming a second silicon oxide film on the silicon active layer surface of the SOI substrate; subjecting the bonding surfaces of the SOI substrate and a supporting substrate that has a thermal expansion coefficient different from that of the SOI substrate to an activation treatment; bonding the SOI substrate and the supporting substrate with the second silicon oxide film being interposed therebetween at a temperature higher than room temperature; then repeating at least twice a combination of a bonding heat treatment for increasing the bonding strength between the SOI substrate and the supporting substrate in the bonded substrate and a grinding/thinning process for grinding and thinning the silicon substrate under predetermined heat treatment temperature conditions and plate thickness thinning conditions; exposing the first silicon oxide film by removing the thinned silicon substrate by means of etching; and removing the first silicon oxide film by means of etching.