METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

ABSTRACT OF THE DISCLOSURE

An object is to provide a method for manufacturing an SOI substrate including a single crystal silicon film whose plane orientation is (100) and a single crystal silicon film whose plane orientation is (110) with high yield. A first single crystal silicon substrate whose plane orientation is (100) is doped with first ions to form a first embrittlement layer. A second single crystal silicon substrate whose plane orientation is (110) is doped with second ions to selectively form a second embrittlement layer. Only part of the first single crystal silicon substrate is separated along the first embrittlement layer by first heat treatment, thereby forming a first single crystal silicon film. A region of the second single crystal silicon substrate, in which the second embrittlement layer is not formed, is removed. Part of the second single crystal silicon substrate is separated along the second embrittlement layer by second heat treatment, thereby forming a second single crystal silicon film.

Figure 1D