

Abstract

A manufacturing method is provided in which when a non-single crystalline semiconductor film is annealed with a laser, in order to crystallize the semiconductor film according to an appropriate scanning pitch and an appropriate number of times of irradiation, scanning is relatively performed on the non-single crystalline semiconductor film with a pulse laser shaped in a line beam shape having a flat portion in a shape of a beam cross-section in a short axis direction, the pulse laser having a short axis width of 100 to 500 μm , so that the pulse laser is made to move for each pulse, and irradiation with the pulse laser is performed a number of times of irradiation (n) in an overlapped manner, a channel length of the transistor is (b), the pulse laser has irradiation pulse energy density (E) lower than irradiation pulse energy density at which fine crystallization occurs at the non-single crystalline semiconductor film by irradiation with the pulse laser, and at which crystal grain size growth is saturated by a plurality of times of irradiation, the number of times of irradiation n_0 is set at (n_0-1) or greater when the number of times of irradiation at which the crystal grain size growth is saturated by irradiation with the pulse laser having the irradiation pulse energy density (E), and a scanning direction of the pulse laser is set as a

channel length direction of the transistor, and an amount of movement (c) for each of the pulses is set at less than (b).