METHOD FOR MANUFACTURING CRYSTALLINE SEMICONDUCTOR FILM

ABSTRACT

The present invention provides crystallization of a non-single crystalline semiconductor film, when the semiconductor film is annealed by laser, with an appropriate scanning pitch and number of irradiation.

Provided is a method for manufacturing a crystalline semiconductor film, in which a pulse laser of a line beam shape is irradiated to perform crystallization, the method characterized in that the pulse laser has a plateau region (beam width of "a") of a uniform intensity in cross-sectional shapes of the beam in a scanning direction, the pulse laser has an irradiation pulse energy density E that is lower than an irradiation pulse energy density that causes microcrystallization on the non-single crystalline semiconductor film, the number n of irradiation of the pulse laser is more than or equal to (n0-1) where n0 is the number of irradiation at which growth in crystal grain size is saturated by the irradiation by the pulse laser with the irradiation pulse energy density E, and a shift amount c in the scanning direction of the pulse laser is less than or equal to b/2 where b is the width of a channel region of a transistor formed with the semiconductor film crystallized by irradiation of the pulse laser.

Fig. 1