

ABSTRACT

A crystalline semiconductor film having a sufficiently small and uniform grain sizes may be provided on a semiconductor substrate.

In a preferred embodiment of the present invention, a glass substrate 8 having an amorphous semiconductor thin film 9 formed on the upper layer thereof may be kept in the heated state by raising the heating temperature of the glass substrate 8. The amorphous semiconductor thin film 9 on the glass substrate 8 may be heated up to the temperature not exceeding the fusing point by irradiating the amorphous semiconductor thin film 9 with a laser beam 20. Thus, the amorphous semiconductor thin film 9 may be crystallized. According to this embodiment, the crystalline semiconductor film having the sufficiently small and uniform grain size can be provided without causing any damages on the glass substrate. According to another embodiment, the glass substrate may be kept in the heated state before it is irradiated with the laser beam, so that the variation in the temperature can be kept consistently upon each shot of the laser beam. Furthermore, any crystalline defects can be eliminated by the laser beam irradiation. Thus, any impurities that may exist inside the amorphous semiconductor film or any contaminations that may adhere on the surface of the amorphous semiconductor film can be removed.