

ABSTRACT

A laser annealing apparatus (1) according to the embodiment includes: a laser beam source (11) configured to emit a laser beam (L1) to crystallize an amorphous silicon film (101a) on a substrate (100) and to form a poly-silicon film (101b); a projection lens (13) configured to condense the laser beam to irradiate a silicon film (101); a probe beam source configured to emit a probe beam (L2); a photodetector (25) configured to detect the probe beam (L3) transmitted through the silicon film (101); a processing apparatus (26) configured to calculate a standard deviation of detection values of a detection signal output from the photodetector, and to determine a crystalline state of the crystallized film based on the standard deviation.

FIG.1 accompanies the abstract.