

LASER SPIKE ANNEALING USING FIBER LASERS

ABSTRACT

The disclosure is directed to laser spike annealing using fiber lasers. The method includes performing laser spike annealing of a surface of a wafer by: generating with a plurality of fiber laser systems respective CW output radiation beams that partially overlap at the surface of the wafer to form an elongate annealing image having a long axis and a length L_A along the long axis; heating at least a region of the wafer to a pre-anneal temperature T_{pA} ; and scanning the elongate annealing image over the surface of the wafer and within the pre-heat region so that the elongate annealing image has a dwell time t_D in the range $30 \text{ ns} \leq t_D \leq 10 \text{ ms}$ and raises the temperature of surface of the wafer to an annealing temperature T_A .

(Figure 1)