Improvement of Threshold Voltage Roll-off by Ultra-shallow Junction Formed by Flash Lamp Annealing.

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Abstract

Flash lamp annealing (FLA) was first applied to complementary MOSFETs (CMOS) as a new method of activating implanted impurities in source and drain. By optimizing ion implantation and activation annealing conditions, junction depth less than 10 nm with good junction leakage were successfully obtained for both p^+/n and n^+/p junctions. Threshold voltage (V_{th}) roll-off characteristics for MOSFETs fabricated by FLA show drastic improvement as compared with conventional spike annealing.