

We investigated mobility enhancement mechanism of ultra-thin strained-Si channel in fully depleted (FD) strained-SOI CMOS at high temperature, which is a realistic chip operation condition. We found that strained-Si thickness limitation is thinner at high temperature than that at room temperature because of the suppression of the mobility degradation by QMC effect and Dit at high temperature. This fact means that thinner strained Si films, advantageous in short channel effects, are applicable.