Radical Nitridation in Multi-oxide Process for 100nm Generation CMOS Technology

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We propose a new multi-oxide technology utilizing radical nitridation followed by multi-oxide formation. It drastically improves the ratio of the drive current to the gate leakage current (Ig) for high-performance and low-power Tr. In addition, it is easy to apply to the conventional CMOS processes. This technology reduces equivalent oxide thickness(EOT) of low-power Tr. by 0.3nm. It also suppresses Ig for high-performance Tr. by two orders of magnitude without an increase of EOT. Each oxide thickness of the multi-oxide is scalable to support SoC applications.