

## Dual material pile gate approach for low leakage finfet

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### Abstrak

FinFET (Fin Field-Effect

Transistor) technology has recently seen a major increase in adoption

for use in integrated circuits because of its high immunity to short channel

effects and its further ability to scale

down. Previously, a major research contribution was made to reduce the leakage current in the

conventional bulk devices. So many different alternatives like bulk isolation and oxide isolation are all

having some pros and

cons. Here in this paper, we present a novel pile gate FinFET structure to

reduce the leakage current, as compared with Bulk FinFET without using any pstop implant or

isolation oxide as in the

Silicon-on-Insulator (SOI). The major advantage of this type of

structure is that there is no need of high substrate doping, a 100% reduction in the

random dopant fluctuation (RDF) and an increase in the ION/IOFF

value. It can be very useful to improve the drain-induced barrier lowering (DIBL) at smaller

technological nodes. All the work is supported by 3D TCAD simulations, using Cogenda TCAD.