

The importance of using dual-channel heterostructure in strained P-MOSFETs

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Abstract : We present in this work a dual-channel heterostructure strained structure, introduce the high carrier mobility Awaited in heterostructure devices while using several models which are: CVT, SHIRAHATA, and WATT, we present a two-dimensional simulation of dual strained channel heterostructure P-MOSFETs. This study is accomplished using SILVACO-TCAD simulation software, the comparison of the effect of using strain technique on P-MOSFET transistors will demonstrate the importance of using strain technique especially in dual channel heterostructure MOSFET. The simulation of fabrication steps and the extraction of the electronic proprieties in terms of transfer and output characteristics, transconductance, and the quasi-static capacitance allow understanding and interpreting these enhancements

Keywords : Strained Silicon, SiGe layer, MOSFET; Heterostructure, simulation, Silvaco