عنوان مقاله:

Analytical Study of the Intrinsic Velocity of Nanoscale Strained Silicon MOSFETs, including the Effect of Germanium

محل انتشار:

اولین کنفرانس ملی مهندسی برق اصفهان (سال: 1391)

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خلاصه مقاله:

A fundamental knowledge on the quantum limit for low dimensional device is vital for devicescharacterization. Thus in this paper, the intrinsic velocity in two dimensional strained Si is developed using theFermi Dirac distribution function of order zero, . The impact of germanium content in relaxed SiGesubstrate, carrier concentration and temperature on the intrinsic velocity is extensively studied. It is demonstratedthat the intrinsic velocity is the Fermi velocity in the degenerate regime, which varies linearly with the carrierconcentration but is a weak logarithmic function of temperature. However, for nondegenerate statistic, it is stronglydependent on the temperature that appropriates to the thermal velocity

کلمات کلیدی:

Intrinsic velocity, strained Si, two dimensional, Fermi Dirac, carrier concentration, temperature

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