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Series resistance in different operation regime of junctionless transistors

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ABSTRACT

Operation mode dependent series resistance (R_{sd}) behavior of junctionless transistors (JLTs) has been discussed in detail. R_{sd} was increased for decreasing gate bias in bulk conduction regime, while a constant value of R_{sd} was found in accumulation operation mode. Those results were compared to conventional inversion-mode (IM) transistors, verified by 2D numerical simulation and temperature dependence of extracted R_{sd} . This work provides key information for a better understanding of JLT operation affected by R_{sd} effects with different state of conduction channel.

Keywords: junctionless transistors (JLTs), series resistance (R_{sd}), bulk channel, accumulation channel, numerical simulation and temperature dependence.

1. INTRODUCTION

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