

研究室名	棚本研究室 論文発表
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題名	SPICE Simulation of 32-kHz crystal-oscillator operation based on Si tunnel FET
掲載雑誌	IEICE Electronics Express, Vol.17, No.6, 1-6
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概要	<p>The tunnel field-effect transistor (TFET) is one of the promising transistors which is expected to replace some complementary metal-oxide semiconductor (CMOS) circuits. Here, we apply a SPICE simulation of a Si TFET using high-K gate insulator to a simple circuit of 32-kHz crystal oscillator and compare the power consumption of Si TFE with conventional CMOSs calculated from the predictive transistor model (PTM). We considered L=65-nm and L=90-nm devices based on a table model whose values are derived from technology computer aided design (TCAD) calculations. We show that the power consumptions of TFETs are about 22.3 % ~38.6 % lower than those of CMOSs for L=65-nm devices, and we show the 13.6 %~36.1% lower power consumption of TFETs for L=90-nm devices.</p>