

Forward Body Bias for Microprocessors in 130nm Technology Generation and Beyond

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Device and testchip measurements show that forward body bias (FBB) can be used effectively to improve performance and reduce complexity of a 130nm dual- V_T technology, reduce leakage power during burn-in and standby, improve circuit delay and robustness, and reduce active power. FBB allows performance advantages of low temperature operation to be realized fully without requiring transistor redesign, and also improves V_T variations, mismatch, and $g_m \times r_o$ product.