

A Low Power Methodology for Portable Electronics

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Abstract

This paper introduces a power savings methodology for portable electronics based on a PowerWise™ Interface (PWI), leakage handling, and low power amplifier scheme. The PWI system dynamically monitors circuit performance with a delayline, and provides a substantially constant minimum-supply voltage for digital processors to properly operate at a given frequency. Back-biasing preventing current from leaking becomes more important as the technology goes deeper. And the efficiency of power amplifiers affects battery lifetime directly. A dynamic power model is presented to calculate power savings and battery lifetime according to systems topology.

Index terms: Battery lifetime, Adaptive voltage scaling (AVS), Back-bias, Poweramplifer controller, Power wise interface (PWI)