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Abstract

Switch-mode voltage regulators are considered as the dominant choice for low-power integrated power supplies. Employing the advantages of a switch-mode voltage regulator in 0.18 μ m CMOS technology, a power supply has been designed for a complete System-on-Chip (SoC). While offering enough drive capability for the entire system, the supply provides an extra highly-regulated output for noise-sensitive analog blocks. At first, a front-end buck regulator converts the time-variant unregulated input voltage to an initially-regulated general voltage. To further regulate this voltage for noise-sensitive blocks, a new continuous-time buffered voltage source has been added to the circuit. To maximize power efficiency and to benefit from an initially-regulated input, this source is connected to the front-end switch-mode regulator output. For proper operation, the minimum input voltage to the supply is 1.3V. With this minimum input voltage, the 1.1V switching regulator sources up to 1A output current. The continuous-time 0.9V- buffered source provides up to 100mA for noise-sensitive units. It converts the 1.1V regulated voltage to a 0.9V smooth output.

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Index Terms

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