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A 5-V to 30-V Current-Mode Boost Converter with Integrated Current Sensor and Power-on Protection

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Abstract : This paper presents a 5-V to 30-V current-mode boost converter for powering the drive circuit of a micro-electro-mechanical sensor. The design of a transconductance amplifier and an integrated current sensing circuit are presented. In addition, essential building blocks for power-on protection such as a soft-start and clamp block and supply and clock ready block are discussed in details. The chip is fabricated in a 0.18-μm CMOS process. Measurement results show that the soft-start and clamp block can effectively limit the inrush current during startup and protect the boost converter from startup failure.

Keywords : boost converter, current sensing, power-on protection, step-up converter, soft-start
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