

基于 28 nm CMOS 工艺的鉴频鉴相器和电荷泵设计

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摘 要: 基于 SMIC 28 nm CMOS 工艺, 完成了高性能鉴频鉴相器和电荷泵的设计. 采用 D 触发器型鉴频鉴相器结构, 通过优化其门电路结构, 获得了一种两路输出信号具有良好匹配性能的鉴频鉴相器. 采用源极开关的电荷泵结构, 同时在该结构中采用轨到轨输入级的运放, 获得了一种在较大的输出电压范围内都具有低失配电流的电荷泵.

关键词: 高性能; 鉴频鉴相器; 电荷泵; 源极开关; 电流失配

The Design of Phase Frequency Detector and Charge Pump

Based on 28 nm CMOS Process

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Abstract: The design of high-performance Phase Frequency Detector and Charge Pump based on SMIC 28 nm CMOS process has been achieved in this paper. By using D flip-flop PFD and optimizing structure of the gate, a PFD has been accomplished, which two output had a good matching performance. To obtain a CP with low mismatch current under the larger range of output voltage, source-switch CP structure and an operational amplifier with a rail-to-rail input stage were used.

Key words: high-performance; phase frequency detector; charge pump; source-switch; current mismatch

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