

14-bit 200MS/s 数字自校准电流舵式 D/A 转换器

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摘 要: 采用一种新型数字校准算法, 改变了传统方法对电流源单元总是从最低位地址选取的方法, 通过对电流源单元选取起点和终点的计算和存储, 对电流源单元采用“选取方向随机”和特殊代码全随机选取的办法, 将电流源的失配转换为白噪声并有效提高了 DAC 的动态性能. 在采用 SMIC18 1P6M 工艺的情况下获得的后仿真结果表明, 相对于不加校准的设计, SFDR 从 88.3 dB 提高到 92.3 dB, 而总体芯片面积不变.

关键词: 电流舵 D/A; 数字自校准; SFDR

14 Bits 200MSPS Digital Self-Calibration

Current-Steering D/A Converter

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Abstract: In this paper it adopted a novel a digital calibration algorithm, and it selects the current sources with random ways which keeps to the principles of random selection direction and full random selection on the situation of special code through calculating and storing the starting and finishing point, by this way it can whiten the mismatch noise and improve dynamic performance of DAC. Based on SMIC18 1P6M technology, a 14 bits 200MSPS digital self-calibration current-Steering DAC is implemented and its post simulation results show the SFDR is improved from 88.3 dB to 92.3 dB with calibration but the area of this chip is similar to the non-calibration one.

Key words: digital to analog converter (DAC); digital self-calibration; spurious-free dynamic range (SFDR)

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