

Multi-Point Correction Method in CMOS Current-Mode Function Design

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Abstract

We propose a multi-point correction method to design a CMOS current-mode function with high input dynamic range. The dynamic range is dependent on the number of correcting circuits. Consider the accuracy, we can properly select the turn-on current in the correcting circuit. The exponential circuit for a design example, equipped with six correcting circuits, has a linearity of 39.5dB for linearity error less than 0.3 dB and has a large input dynamic range from $-60 \mu\text{A}$ to $128 \mu\text{A}$.

Keyword : current-mode circuit, Taylor's expansion, correction circuit, analog circuit design