



## Low-voltage CMOS Log Companding Analog Design

By Francisco Serra-Graells

Springer-Verlag New York Inc. Paperback. Book Condition: New. Paperback. 192 pages. Dimensions: 9.2in. x 6.1in. x 0.5in. Low-Voltage CMOS Log Companding Analog Design presents in detail state-of-the-art analog circuit techniques for the very low-voltage and low-power design of systems-on-chip in CMOS technologies. The proposed strategy is mainly based on two bases: the Instantaneous Log Companding Theory, and the MOSFET operating in the subthreshold region. The former allows inner compression of the voltage dynamic-range for very low-voltage operation, while the latter is compatible with CMOS technologies and suitable for low-power circuits. The required background on the specific modeling of the MOS transistor for Companding is supplied at the beginning. Following this general approach, a complete set of CMOS basic building blocks is proposed and analyzed for a wide variety of analog signal processing. In particular, the covered areas include: amplification and AGC, arbitrary filtering, PTAT generation, and pulse duration modulation (PDM). For each topic, several case studies are considered to illustrate the design methodology. Also, integrated examples in 1.2 $\mu$ m and 0.35 $\mu$ m CMOS technologies are reported to verify the good agreement between design equations and experimental data. The resulting analog circuit topologies exhibit very low-voltage (i. e. 1V) and low-power (few...



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