



Compact Low-Voltage and High-Speed CMOS, BiCMOS and Bipolar Operational Amplifiers (The Springer International Series in Engineering and Computer Science)

Klaas-Jan de Langen, Johan Huijsing

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Compact Low-Voltage and High-Speed CMOS, BiCMOS and Bipolar Operational Amplifiers discusses the design of integrated operational amplifiers that approach the limits of low supply voltage or very high bandwidth. The resulting realizations span the whole field of applications from micro-power CMOS VLSI amplifiers to 1-GHz bipolar amplifiers.

The book presents efficient circuit topologies in order to combine high performance with simple solutions. In total twelve amplifier realizations are discussed. Two bipolar amplifiers are discussed, a 1-GHz operational amplifier and an amplifier with a high ratio between the maximum output current and the quiescent current. Five amplifiers have been designed in CMOS technology, extremely compact circuits that can operate on supply voltages down to one gate-source voltage and two saturation voltages which equals about 1.4 V and, ultimate-low-voltage amplifiers that can operate on supply voltages down to one gate-source voltage and one saturation voltage which amounts to about 1.2 V. In BiCMOS technology five amplifiers have been designed. The first two amplifiers are based on a compact topology. Two other amplifiers are designed to operate on low supply voltages down to 1.3 V. The final amplifier has a unity-gain frequency of 200 MHz and can operate down to 2.5 V.

Compact Low-Voltage and High-Speed CMOS, BiCMOS and Bipolar Operational Amplifiers is intended for the professional analog designer. Also, it is suitable as a text book for advanced courses in amplifier design.

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