



# CMOS Analog Design Using All-Region MOSFET Modeling

*By Márcio Cherem Schneider, Carlos Galup-Montoro*

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Covering the essentials of analog circuit design, this book takes a unique design approach based on a MOSFET model valid for all operating regions, rather than the standard square-law model. Opening chapters focus on device modeling, integrated circuit technology, and layout, whilst later chapters go on to cover noise and mismatch, and analysis and design of the basic building blocks of analog circuits, such as current mirrors, voltage references, voltage amplifiers, and operational amplifiers. An introduction to continuous-time filters is also provided, as are the basic principles of sampled-data circuits, especially switched-capacitor circuits. The final chapter then reviews MOSFET models and describes techniques to extract design parameters. With numerous design examples and exercises also included, this is ideal for students taking analog CMOS design courses and also for circuit designers who need to shorten the design cycle.

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### **About the Author**

Márcio Cherem Schneider is a Professor in the Electrical Engineering Department at the Federal University of Santa Catarina, Brazil, where he has worked since 1976. He has also spent a year at the Swiss Federal Institute of Technology (EPFL) and has worked as a Visiting Associate Professor in the Department of Electrical and Computer Engineering at Texas A&M University. His current research interests mainly focus on MOSFET modeling and transistor-level design, in particular of analog and RF circuits.

Carlos Galup-Montoro is currently a Visiting Scholar in the Electrical Engineering Department at the University of California, Berkeley, and a Professor in the Electrical Engineering Department at the Federal University of Santa Catarina, Brazil, where he has worked since 1990. His main research interests are in field-effect transistor modeling and transistor-level design.

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