Analog Circuits and Systems for Voltage-Mode and Current-Mode Sensor Interfacing Applications [

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Monografía

This book describes novel circuit and system solutions for the design of analog electronic interfaces for resistive, capacitive and temperature sensors, also showing a wide variation range, with the intent to give a complete overview of the first analog front-ends.\00A0 After a description of the main kinds of sensors and their definitions, the book presents novel electronic circuits, most of which do not require any initial calibration, also designed with analog microelectronic techniques, at transistor level in a standard CMOS integrated technology. These solutions utilize both AC and DC excitation voltages for the employed sensor and are developed both in Voltage-Mode approach (which considers the use of Operational Amplifiers or Operational Transconductance Amplifiers as the main active blocks) and in Current-Mode approach (using the Second Generation Current Conveyor as the main, active device), as well as with Low Voltage Low Power characteristics when designed for portable applications and instrumentations. The interfaces described in this book can be fabricated easily both as prototype boards, for a fast characterization (simply implemented by students and technicians) and as integrated circuits, using modern design techniques.\00A0 Provides a thorough introduction and description of sensors and basic resistive, capacitive and temperature sensor interfacing together with their main characteristics and parameter definitions; Includes a complete overview of the first analog front-ends, in particular for wide-range resistive and capacitive physical and chemical sensors; Describes interfaces that are easy to understand and implement both with discrete components for PCB fabrication and in a standard CMOS integrated technology

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