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ANALOG CIRCUIT DESIGN – DISCRETE AND INTEGRATED

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This textbook (769 pages) is intended for EE majors envisioning industrial careers in analog electronics. It draws from the author's teaching experience at San Francisco State University, where over the years he has contributed to the formation of hundreds of students now gainfully employed in Silicon Valley as analog IC designers, product/process/reliability engineers, test/test-development engineers, and analog applications/marketing engineers – positions that are in ongoing demand.

The book covers both *bipolar* and *CMOS* technologies as nowadays a typical industrial milieu requires that an analog engineer be conversant in both. The book also covers *semiconductor principles* in sufficient depth to meet the basic needs of the practicing engineer. Every analog function is inextricably rooted on a physical phenomenon, so especially analog IC designers and product/process/reliability engineers need to be conversant with the physics of semiconductors.

The first *three* chapters establish electronics foundations via the more traditional and pedagogically sound approach of *discrete design*. As such, they form the basis of a first course in Electronics, but are useful also to test and applications engineers, who often need to design ad-hoc ancillary circuitry of the discrete type.

The remaining *four* chapters offer a *fully integrated design* approach, with bipolar and CMOS technologies being covered side by side. These chapters form the basis of a senior/graduate course in Analog IC Design. They are intended for IC designers but also for all other categories of engineers involved in fabrication, test, and applications. Application engineers, by far the largest group, need a working familiarity both with the technology (in order to make educated selections), and with an IC's inner functioning (in order to optimize its application). The book's aim is to promote a balance between the ability to *design on chip* and the ability to *design on board*.

Written by an enthusiastic circuit practitioner, the book places great emphasis on developing *intuition* and *physical insight*. The numerous examples and problems have been carefully thought out to promote *problem solving methodologies* of the type engineers apply daily on the job. SPICE is used extensively

