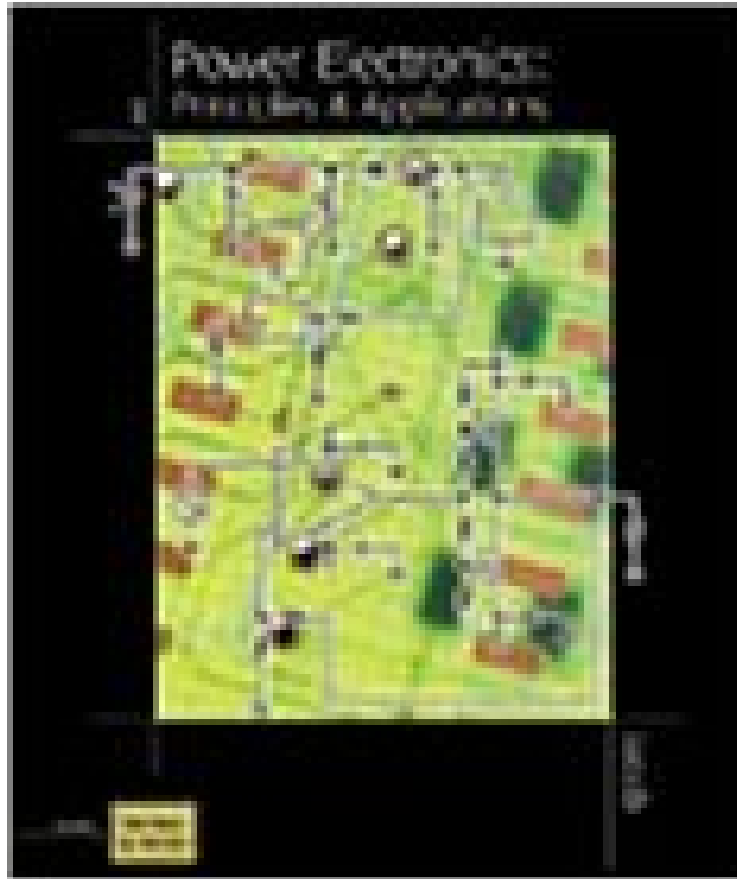


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Power Electronics: Principles and Applications

J. Michael Jacob

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Power Electronics; Principles and Applications guides the reader through the circuit analysis techniques in the design, analysis and fabrication of power electronics for consumer, and commercial applications as well as those unique to industrial manufacturing. Included are composite high-voltage amplifiers, power op amps, linear audio power ICs, MOSFETs used in class AB amplifiers and in power switches, switching power supplies, thyristors and thyristor control circuits. Ideal for use in ABET-accredited engineering technology programs, the book adds to the classical

industrial power control a rare mix of electronics designed to deliver power to consumer and commercial loads such as audio systems, and the management of power for the explosion of hand-held devices. How a power circuit is built is as critical as the parts that are selected. Both protoboard and printed circuit board layout principles are explained with detailed, step-by-step illustrations, photographs and lots of lab practice. Microprocessors are pervasive; in garage door openers, microwave oven, refrigerators, faxes, printers, copiers, and many toys. Power electronics are needed to follow their commands, delivering hundreds of milliamps to tens of amps to the motors, valves, heaters and lights that we use. A variety of low and high side switches, switch drivers and H bridges are illustrated. Buck, boost, flyback and line-powered switching power supplies are explained, design techniques and special purpose IC explored in detail, and practical laboratory exercises provided. Additional chapters feature circuit design simulations and lab exercises that offer practice in the design, analysis, fabrication and testing of classical industrial thyristor-based conversion and motor drive circuits.

About the Author J. Michael Jacob has published several internationally popular texts on analog integrated circuits and industrial control electronics, as well as a variety of papers and conference presentations on the art and technology of teaching. Professor Jacob's teaches at Purdue University and has received a number of awards and honors, including the Purdue University's undergraduate teaching award (the Amoco award), the Paradigm Award from the Minority Technology Association and the Joint Services Commendation Medal (for excellence in instruction) from the Secretary of Defense. In 1999 he was listed in Purdue University's Book of Great Teachers. He has taught at Purdue for 25 years and at Florence Darlington Technical College in South Carolina for seven years. Mr. Jacob has six years of industrial experience as a test engineer in the automotive and aerospace industries.