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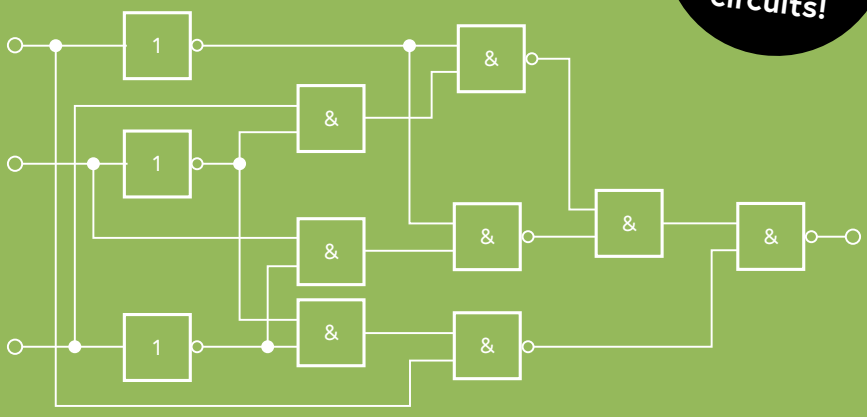
Digital Electronics

The Basics, New Ideas & Applications

Tons of ideas and simple circuits!



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Preface

The reader is presented with a book dedicated to the fundamental principles of digital electronics. A deep study of the presented sections will enable the reader not only to grasp the intricacies of building digital circuits but also to acquire skills in independent design and debugging of electronic constructs of varying complexity.

The structure of the publication includes three main parts:

1. **Fundamentals of Digital Electronics**: The first part is devoted to outlining the basic principles. Initially, the reader will be introduced to the functioning of key nodes of digital technology through demonstration stands. These stands, easily assembled from available components (LEDs, diodes, resistors, and switches), vividly illustrate the operation of digital elements, allowing for a conceptual understanding of their work. We then proceed to a deeper study of logic elements, tracing their evolution from historical prerequisites to modern implementations based on advanced materials and innovative circuit design solutions. A detailed list of the logic elements discussed is provided in the book's Table of contents.

2. **Innovative Directions in Digital Electronics**: The second part of the publication invites the reader to explore new ideas and developments in the field of digital electronics. This section aims to stimulate creative imagination, activate thinking processes, and foster the generation of original projects.

3. **Practical Implementation and Application**: The concluding third part thoroughly examines the practical use of elements and circuits in digital electronics. An extensive collection of circuits classified by their functional purpose is provided, including electronic switches, pulse generators, pulse-width modulation devices, frequency multipliers and dividers, phase shifters of digital signals, as well as digital frequency filters.

We wish the reader success in mastering the theoretical foundations of digital electronics, applying the acquired knowledge in practice, developing creative potential, and enhancing professional competencies.